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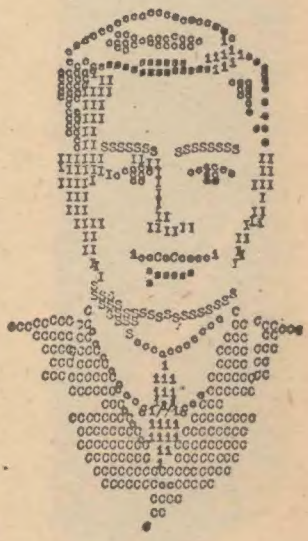

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Editor
JOHN W. CAMPBELL, JR

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NEXT ISSUE ON SALE NOVEMBER 18, 1947

ATOMIC ENERGY FOR PEACE

The almost universal expression for industrial, peacetime application of present atomic knowledge is "atomic power"—and the term "power" today implies strongly a background of humming steam turbines, generators, transformers, and high-voltage power lines stilting off across the country. That is a distinctly limited, and probably a minor application of atomic *energy*.

No steam engine, no matter how powerful, can generate a radio wave, take an X ray of a broken arm, or energize a magnet. Neither can its power break down a molecule of sodium chloride into metallic sodium and chlorine. It can break rock into gravel, move a heavy train, or drive a ship, a battery of lathes or drill presses.

The energy of coal is chemical energy; it can break down a molecule of iron oxide, boil water, or melt iron into a free-flowing liquid. But it can't generate radio waves, or move ships—until by some multi-stage mechanism the chemical energy has been converted into mechanical energy, then from mechanical to electrical.

Electrical energy is the highest form of energy that has been available; it is inherently capable of producing chemical action, or mechanical action. By very simple mechanisms, it can be converted directly into mechanical or chemical energy with high efficiency. It is directly capable of generating electromagnetic radiation. But only by elaborate, multi-stage mechanisms, involving outrageous inefficiency, can electrical energy be converted to the next—and much!—higher stage of energy: atomic energy.

Oh, it can be done all right. The cyclotron is, in essence, a mechanism for converting electric to atomic energy; the output of the cyclotron is at a typical atomic level, as is the betatron and the more ordinary X-ray tube. But all of these are devices to force an inappropriate energy-form to perform a desired function not properly within its field of activity.

Atomic energy operates naturally in that field; all these processes so elaborately achieved with electric energy are natural, simple functions of the nuclear processes. Radioactive isotopes readily, directly, yield X-rays, high-velocity electrons or other subatomic particles. Since it's directly and easily within their scope, they do it without the aid of any complex mechanism, as readily as a lightning

flash generates radio-frequency radiation.

When Volta first started working with currents of electricity, he had no idea of what he was working with. We're somewhat better off on that score—we believe!—in that we have, at least, some useful theory of what's going on. But we don't, actually, have any real knowledge of what happens in the nucleus of an atom, nor why. Our knowledge of atomic structure is almost entirely an external theory; we know what happens outside the nucleus, and know some of the particles that come out. But we don't know what happens inside.

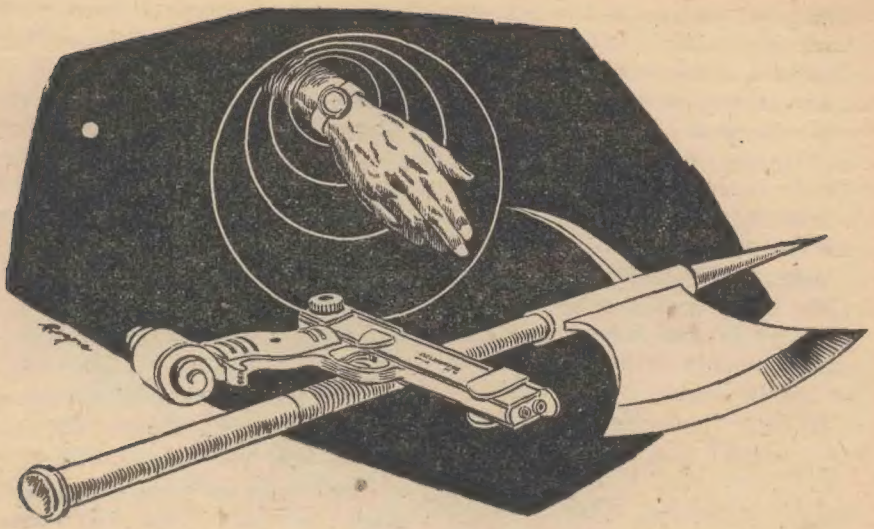
Volta could not possibly have dreamed of radio, X-rays, electrochemical industries, or the immense electrical energy mechanism that our present culture is. We are almost entirely dependent on uses of electrical energy not one of which would have been predictable from what Volta could know.

We're in a very similar situation today. "Atomic power" visualizes converting atomic energy into electrical energy—a degradation of an unfamiliar, uncontrollable energy form into a familiar, convenient form, and its application in that form. Certainly, most of the usefully applied atomic energy of the next generation will be used indirectly, as the lower-level electrical energy. But it won't be a proper, permanent application of atomic energy. Unquestionably, electrical energy is the most flexible we know today; probably it will be generations before enough is known of the more fundamental forms of atomic energy to replace many of our present electrical mechanisms. But definitely, the major function of atomic energy in a true atomic age will not be as *power*. The one present proper application of atomic energy is that at Hanford—the first truly atomic industry; transmutation. With a sufficient understanding of nuclear processes, we may get somewhere in that field; at the moment there's no obvious answer to the problem of really large-scale transmutation, because of the stupendous energy-change relationships involved. If it's an exothermic, energy-producing change, the quantity of energy involved in transmuting 100 tons of A to B per day would boil away a Mississippi or two. If it's endothermic, energy-consuming, nothing less than a high-power atomic energy plant could afford to feed it. But maybe, some day, we'll learn how to make atoms absorb energy at will, so that we can transmute A to B, while cooling the process by absorbing energy in a Y to Z transmutation.

The production of synthetic radioactives for tracer uses right now is a truly atomic industry. The use of synthetic radioactives as a substitute for X-ray machines will be another truly atomic energy application. But these are only two small, simple, and obvious applications of one of the great, basic energy forms of the universe. We've got too much still to learn to permit any really thoughtful estimates of what can—or can't—be done.

But "burning" U-235 to generate steam to make electric power is something like burning coal to generate carbon dioxide for dry-ice manufacture. Coal has other, better uses for which its characteristics are invaluable.

THE EDITOR.



CHILDREN OF THE LENS

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BY E. E. SMITH

Illustrated by Rogers

MESSAGE OF TRANSMITTAL

SUBJECT: The Conclusion of the Boskonian War; A Report:
BY: Christopher Kinnison, L3, of Klovia:
TO: The Entity Able to Obtain and to Read It.

To you, the third-level intellect who has been guided to this imperishable container and who is able to break the Seal and to read this tape, and to your fellows, greetings:

For reasons which will become obvious, this report will not be made available for an indefinite but very

long time; perhaps ten million, perhaps ten million million Galactic Standard years; my present visualization of the Cosmic All does not extend to the time at which such action will become necessary. Therefore it is desirable to review briefly the most pertinent facts of the earlier phases of Civilization's climatic conflict; information which, while widely known at present, will probably in that future time exist otherwise only in the memories of my descendants.

In early Civilization law enforcement lagged behind crime because the police were limited in their spheres of action, while criminals were not. Each technological advance made that condition worse until finally, when Bergenholm so perfected the crude inertialess space-drive of Rodebush and Cleveland that commerce throughout the Galaxy became an actuality, crime began to threaten Civilization's very existence.

Of course it was not then suspected that there was anything organized, coherent, or of large purpose about this crime. Centuries were to pass before my father, Kimball Kinnison of Tellus, now Galactic Co-ordinator, was to prove that Boskonia, an autocratic, dictatorial culture diametrically opposed to every ideal of Civilization—was, in fact, back of practically all of the pernicious activities of the First Galaxy. Even my father, however, has never had any inkling either of the existence and the doings of the Eddorians or of the fundamental *raison d'etre* of the Galactic Patrol —facts which can never be revealed to any mind not inherently stable at the third level of stress.

Virgil Samms, then Chief of the Secret Service of the Triplanetary League, perceived the general situation and foresaw the shape of the inevitable. He realized that unless and until his organization could secure an identifying symbol which could not be counterfeited, police work would remain relatively ineffectual. Tellurian science had done its best in the golden meteors of Triplanetary's Secret Service, and its best was not good enough.

Virgil Samms became the first wearer of Arisia's Lens, and during his life he began the rigid selection of those worthy of wearing it. For centuries the Patrol grew and spread. It became widely known that the Lens was a perfect telepath, that it glowed with colored light only when worn by the individual to whose ego it was attuned, that it killed any other living being who attempted to wear it. Whatever his race or shape, any wearer of the Lens was accepted as the embodiment of Civilization.

Kimball Kinnison was the first entity of Civilization to suspect that the Boskonian organization existed. He was the first Lensman to realize that the Lens was more than identification and a telepath. He was thus the first Lensman to return to Arisia to take the second stage of Lensmanship—their treatment which only an exceptional brain can withstand, but which gives the Second-Stage Lensman any mental

power which he needs and which he can both visualize and control.

Aided by Lensman Worsel of Velantia and Tregonsee of Rigel IV—the former a winged reptile, the latter a four-legged, barrel-shaped creature with the sense of perception instead of sight—Kimball Kinnison traced and surveyed Boskone's military organization in the First Galaxy. He helped plan the attack upon Grand Base, the headquarters of Helmuth, who "spoke for Boskone." By flooding the control dome of Grand Base with thionite, that deadly drug native to the peculiar planet Trenco, he made it possible for Civilization's Grand Fleet, under the command of Port Admiral Haynes—now retired—to reduce that Base. He, personally killed Helmuth in hand-to-hand combat.

He was instrumental in the almost-complete destruction of the Overlords; those sadistic, life-eating reptiles native to the planet Delgon of the Velantian solar system, who were the first to employ against humanity the hyperspatial tube.

He was wounded more than once; in one of his hospitalizations becoming acquainted with Surgeon General Lacy—now retired—and with Sector Chief Nurse Clarrissa MacDougall, who was later to become the widely-known "Red Lensman" and, still later, my mother.

In spite of the military defeat, however, Boskonia's real organization remained intact, and Kinnison's further search led into Lundmark's Nebula, thenceforth called the Second Galaxy. The planet Medon, being attacked by the Boskonians, was rescued from the enemy and was moved across intergalactic space to the First Galaxy. Medon made two notable contributions to Civilization: first, electrical insulation, conductors, and switches by whose means voltages and amperages theretofore undreamed-of could be handled; and, later, Phillips, a Posenian surgeon was able there to complete the researches which made it possible for human bodies to grow anew any members or organs which had been lost.

Kinnison, deciding that the drug syndicate was the quickest and surest line to Boskone, became Wild Bill Williams the meteor miner, a hard-drinking, bentlam-eating, fast-shooting space-hellion. As Williams he traced the zwilnik line upward, step by step, to the planet Jarnevon in the Second Galaxy. Upon Jarnevon lived the Eich; frigid-blooded monsters more intelligent, more merciless, more truly Boskonian even than the Overlords of Delgon.

He and Worsel, Second-Stage Lensmen both, set out to investigate Jarnevon. He was captured, tortured, dismembered; but Worsel brought him back to Tellus with his mind and knowledge intact—the enormously important knowledge that Jarnevon was ruled by a Council of Nine of the Eich, a council named Boskone.

Kinnison was given a Phillips treatment, and again Clarrissa MacDougall nursed him back to health. They loved each other, but they could not marry until the Gray Lens-

man's job was done; until Civilization had triumphed over Boskonia.

The Galactic Patrol assembled its Grand Fleet, composed of millions of units, under the flagship *Z9M9Z*. It attacked. The planet of Jalte, Boskonia's Director of the First Galaxy, was consumed by a bomb of negative matter. Jarnevon was crushed between two colliding planets; positioned inertialess, then inerted especially for that crushing. Grand Fleet returned, triumphant.

But Boskonia struck back, sending an immense fleet against Tellus through a hyperspatial tube instead of through normal space. This method of approach was not, however, unexpected. Survey ships and detectors were out; the scientists of the Patrol had been for months hard at work upon the "sunbeam"—a device to concentrate all the energy of the sun into one frightful beam. With this weapon reinforcing the already vast powers of Grand Fleet, the invaders were wiped out.

Again Kinnison had to search for a high Boskonian; some authority higher than the Council of Boskone. Taking his personal superdreadnought, the *Dauntless*, which carried his indetectable, nonferrous speedster, he found a zwilnik trail and followed it to Dunstan's Region, an unexplored, virtually unknown, outlying spiral arm of the First Galaxy. It led to the planet Lyrane II, with its human matriarchy, ruled by Helen its queen.

There he found Illona Potter, the ex-Aldebaranian dancer; who, turning against her Boskonian kidnapers, told him all she knew of the Boskonian planet Lonabar, upon which she had spent most of her life. Lonabar was unknown to the Patrol and Illona knew nothing of its location in space. She did, however, know its unique jewelry—gems also completely unknown to Civilization.

Nadreck of Palain VII, a frigid-blooded Second-Stage Lensman, with one jewel as a clue, set out to find Lonabar; while Kinnison began to investigate Boskonian activities among the matriarchs.

The Lyranians, however, were fanatically nonco-operative. They hated all males; they despised and detested all nonhuman entities. Hence Kinnison, with the consent and assistance of Mentor of Arisia, made of Clarrissa MacDougall a Second-Stage Lensman and assigned to her the task of working Lyrane II.

Nadreck found and mapped Lonabar; and to build up an unimpeachable Boskonian identity Kinnison became Cartiff the jeweler; Cartiff the jewel thief and swindler; Cariff the fence; Cartiff the murderer-outlaw; Cartiff the Boskonian Big Shot. He challenged and overthrew Menjo Bleeko, the dictator of Lonabar, and before killing him took from his mind everything he knew.

The Red Lensman secured information from which it was deduced that a cavern of the Overlords of Delgon existed upon Lyrane II. This cavern was raided and destroyed, the Patrolmen learning that the Eich themselves had a heavily-fortified base upon Lyrane III.

Nadreck, master psychologist, in-

vaded that base tracelessly; learning that the Eich received orders from the Thrallian solar system in the Second Galaxy and that frigid-blooded Kandron of Onlo—Thrallis IX—was second in power only to human Alcon, the Tyrant of Thrale —Thrallis II.

Kinnison went to Thrale, Nadreck to Onlo; the operations of both being covered by the Patrol's invasion of the Second Galaxy. In that invasion Boskonia's Grand Fleet was defeated and the planet Klovia was taken and fortified.

Assuming the personality of Traska Gannel, a Thralian, Kinnison worked his way upward in Alcon's military organization. Trapped in a hyperspatial tube, ejected into an unknown one of the infinity of parallel, coexistent, three-dimensional spaces which comprise the Cosmic All, he was rescued by Mentor, working through the brain of Sir Austin Cardynge, the Tellurian mathematician.

Returning to Thrale, he fomented a revolution, in which he killed Alcon and took his place as the Tyrant of Thrale. He then discovered that his Prime Minister, Fossten, who concealed his true appearance by means of a zone of hypnosis, had been Alcon's superior instead of his adviser. Neither quite ready for an open break, but both supremely confident of victory when that break should come, subtle hostilities began.

Tyrant and Prime Minister planned and launched an attack upon Klovia, but just before engagement the hostilities between the two Boskonian leaders flared into an open fight for supremacy. After a terrific mental struggle, during the course of which the entire crew of the flagship died, leaving the Boskonian fleet at the mercy of the Patrol, Kinnison won. He did not know, of course, and never will know, either that Fossten was in fact an Eddorian or that it was Mentor who in fact overcame Fossten. Kinnison thought, and Mentor encouraged him to believe, that the Prime Minister was an Arisian who had been insane since youth, and that Kinnison himself killed Fossten without assistance. It is a mere formality to emphasize at this point that none of this information must ever become available to any mind below the third level; since to any entity able either to obtain or to read this report it will be obvious that such revealment would produce an inferiority complex which must inevitably destroy both the Galactic Patrol and the Civilization whose instrument it is.

With Fossten dead and with Kinnison already the Tyrant of Thrale, it was comparatively easy for the Patrol to take over. Nadreck drove the Onlonian garrisons insane, so that all fought to the death among themselves; thus rendering Onlo's mighty armament completely useless.

Then, thinking that the Boskonian War was over—encouraged, in fact, by Mentor so to think—Kinnison married Clarrissa MacDougall, established his headquarters upon Klovia and assumed his duties as Galactic Co-ordinator.

Kimball Kinnison, while not, strictly speaking, a mutant, was the penultimate product of a prodigiously long line of selective, controlled breeding. So was Clarrissa MacDougall. Just what course the science of Arisia took in making those two what they are I can deduce, but I do not as yet actually know. Nor, for the purpose of this record, does it matter. Port Admiral Haynes and Surgeon General Lacy thought that they brought them together and promoted their romance. Let them think so—as agents, they did. Whatever the method employed, the result was that the genes of those two uniquely complementary penultimates were precisely those necessary to produce the first, and at present the only Third-Stage Lensmen.

I was born upon Klovia, as were, three or four Galactic-Standard years later, my four sisters—two pairs of twins. I had little babyhood, no childhood. Fathered and mothered by Second-Stage Lensmen, accustomed from infancy to wide-open two-ways with such beings as Worsel of Velantia, Tregonsee of Rigel IV, and Nadreck of Palain VII, it would seem obvious that we did not go to school. We were not like other children of our age; but before I realized that it was anything unusual for a baby who could scarcely walk to be computing highly perturbed asteroidal orbits as "mental arithmetic," I knew that we would have to keep our abnormalities to ourselves, insofar as the bulk of mankind and of Civilization was concerned.

I traveled much; sometimes with my father or mother or both, sometimes alone. At least once each year I went to Arisia for treatment. I took the last two years of Lensmanship, for physical reasons only, at Wentworth Hall upon Tellus instead of upon my native Klovia—because upon Tellus the name Kinnison is not at all uncommon, while upon Klovia the fact that "Kit" Kinnison was the son of the Co-ordinator could not have been concealed.

I graduated, and with my formal enlensment this record properly begins. Much has been told elsewhere, notably in Smith's "History of Civilization"; but all such works are, and of necessity must be, pitifully incomplete.

I have recorded this material as impersonally as possible, realizing fully that my sisters and I did only the work for which we were specifically developed and trained; even as you who read this will do that for which you shall have been developed and are to be trained.

Respectfully submitted,
Christopher Kinnison, L3, Klovia.

I.

Galactic Co-ordinator Kimball Kinnison finished his second cup of Tellurian coffee, got up from the breakfast table, and prowled about in black abstraction. Twenty-odd years had changed him but little. He weighed the same, or a few pounds less; although a little of his mass had shifted downward from his mighty chest and shoulders.

His hair was still brown, his stern face was only faintly lined. He was mature, with a conscious maturity which no young man can know.

"Since when, Kim, did you think that you could get away with blocking *me* out of your mind?" Clarrissa Kinnison directed the thought, quietly. The years had dealt as lightly with the Red Lensman as with the Gray. She had been gorgeous, she was now magnificent. "This room is shielded, you know, against even the girls."

"Sorry, Chris—I didn't mean it that way."

"I know," she laughed. "Automatic. But you've had that block up for two solid weeks, except when you force yourself to keep it down, and that means that you're 'way, *'way* off the beam."

"I've been thinking, incredible as it may seem."

"I know it. Let's have it—cold."

"QX—you asked for it. Queer things have been going on all over. Inexplicable things . . . no apparent reason."

"Such as?"

"Almost any kind of insidious deviltry you care to name. Disaffections, psychoses, mass hysterias, hallucinations; pointing toward a Civilization-wide epidemic of revolutions and uprisings for which there seems to be no basis or justification whatever."

"Why, Kim! How could there be? I haven't heard of anything like that!"

"It hasn't got around. Each solar system thinks that it's a purely local condition, but it isn't. As Galactic Co-ordinator, with a broad view of the entire picture, my office would, of course, see such a thing before anyone else could. We saw it, and set out to nip it in the bud . . . but—" He shrugged his shoulders and grinned wryly.

"But what?" Clarrissa persisted.

"It didn't nip. We sent Lensmen to investigate, but none of them got to the first check-station. Then I asked our Second-Stage Lensmen—Worsel, Nadreck, and Tregonsee—to drop whatever they were doing and solve it for me. They struck it and bounced. They followed, and are still following, leads and clues galore, but they haven't got a millo's worth of results so far."

"What? You mean to say it's a problem *they* can't solve?"

"That they haven't, to date," he corrected, absently. "And that 'gives me furiously to think'."

"It would," she conceded, "and it also would make you itch to join them. Think at me, and it'll help you correlate. You should have gone over the data with me right at first."

"I had reasons not to, as you'll see. But I'm stumped now, so here goes. We'll have to go away back, to before we were married. First: Mentor told me, quote, only your descendants will be ready for that which you now so dimly grope, unquote. Second: you were the only being ever able to read my thoughts without the aid of the Lens. Third: Mentor told us, when we asked him if it was QX for us to go ahead that our marriage was *neces-*

sary, a choice of phraseology which bothered you somewhat at the time, but which I then explained as being in accord with his visualization of the Cosmic All. Fourth: the Patrol formula is to send the man best fitted for any job to do that job, and if he can't swing it, to send the Number One graduate of the current class of Lensmen. Fifth: a Lensman has got to use everything and everybody available, no matter what or who it is. I used even you, you remember, in that Lyrane affair and others. Sixth: Sir Austin Cardynge believed to the day of his death that we were thrown out of that hyperspatial tube, and out of space, deliberately."

"Well, go on. I don't see much, if any connection."

"You will, if you think of those six points in connection with our present predicament. Kit graduates next month, and he'll rank Number One of all Civilization, for all the tea in China."

"Of course. But after all, he's a Lensman. He will insist upon being assigned to some problem; why not to that one?"

"You don't yet see what that problem is. I've been adding two and two together for weeks, and can't get any other answer than four. And if two and two are four, Kit has got to tackle Boskone—the *real* Boskone; the one that I never did and very probably never can reach."

"No, Kim—no!" she almost shrieked. "Not Kit, Kim—he's just a boy!"

Kinnison waited, wordless.

She got up, crossed the room to him. He put his arm around her in the old but ever new gesture.

"Lensman's load, Chris," he said, quietly.

"Of course," she replied then, as quietly. "It was a shock at first, coming after all these years, but . . . if it has to be, it must. But he doesn't . . . surely we can help him, Kim?"

"Surely." The man's arm tightened. "When he hits space I go back to work. So do Nadreck and Worsel and Tregonsee. So do you, if your kind of a job turns up. And with us Gray Lensmen to do the blocking, and with Kit to carry the ball—" His thought died away.

"I'll say so," she breathed. Then: "But you won't call me, I know, unless you absolutely *have* to . . . and to give up you and Kit both . . . why did we have to be Lensmen, Kim?" she protested, rebelliously. "Why couldn't we have been ground-grippers? You used to growl that thought at me before I knew what a Lens really meant—"

"Vell, some of us has got be der first violiners in der orchestra," Kinnison misquoted, in an attempt at lightness. "Ve can't all push vind t'rough der trombone."

"I suppose that's true." The Red Lensman's somber air deepened. "Well, we were going to start for Tellus today, anyway, to see Kit graduate. This doesn't change that."

And in a distant room four tall, shapely, auburn-haired, startlingly identical girls stared at each other

briefly, then went *en rapport;* for their mother had erred greatly in saying that the breakfast room was screened against their minds. Nothing was or could be screened against them; they could think above, below, or, by sufficient effort, straight through any thought-screen that had ever been designed. Nothing in which they were interested was safe from them, and they were interested in practically everything.

"Kay, we've got ourselves a job!" Kathryn, older by minutes than Karen, excluded pointedly the younger twins, Camilla and Constance—"Cam" and "Con".

"At last!" Karen exclaimed. "I've been wondering what we were born for, with nine-tenths of our minds so deep down that nobody except Kit even knows they're there and so heavily blocked that we can't let even each other in without a conscious effort. This is it. We'll go places now, Kat, and really do things."

"What do you mean *you'll* go places and do things?" Con demanded indignantly. "Do you think for a second that you've got jets enough to blast *us* out of all the fun?"

"Certainly," Kat said, equably. "You're too young."

"We'll let you know what we're doing, though," Kay conceded, magnanimously. "You might even conceivably contribute an idea that we could use."

"Ideas—phooey!" Con jeered. "A real idea would crack both of your skulls. You haven't any more plan than a—"

"Hush—shut up, everybody!" Kat commanded. "This is too new for any of us to have any worthwhile ideas on, yet. Tell you what let's do—we'll all think this over until we're aboard the *Dauntless*, halfway to Tellus; then we'll compare notes and work out parts for all of us."

They left Klovia that afternoon. Kinnison's personal superdreadnought, the mighty *Dauntless*—the fourth to bear that name—bored through intergalactic space. Time passed. The four young redheads convened.

"I've got it all worked out!" Kat burst out enthusiastically, forestalling the other three. "There will be four Second-Stage Lensmen at work and there are four of us. We'll circulate—percolate, you might say—around and throughout the Universe. We'll pick up ideas and facts and feed 'em to our Gray Lensmen; surreptitiously, sort of, so they'll think they got them themselves. I'll take Dad for my partner. Kay can have—"

"You'll do no such thing!" A general clamor rose, Con's thought being the most insistent. "If we aren't going to work with all, indiscriminately, we'll draw lots or throw dice to see who gets him, so there!"

"Seal it, snake-hips, please," Kat requested, sweetly. "It is trite but true to say that infants should be seen, but not heard. This is serious business—"

"Snake-hips! Infant!" Con interrupted, venomously. "Listen, my steatopygous and senile friend!"

Constance measured perhaps a quarter of an inch less in gluteal circumference than did her oldest sister; she tipped the beam at one scant pound below her weight. "You and Kay are a year older than Cam and me, of course; a year ago your minds were stronger than ours. That condition, however, no longer exists. We, too are grown up. And to put that statement to test, what can you do that I can't?"

"This." Kathryn extended a bare arm, narrowed her eyes in concentration. A Lens materialized about her wrist; not attached to it by a metallic bracelet, but a bracelet in itself, clinging sentiently to the smooth, bronzed skin. "I felt that in this work there would be a need. I learned to satisfy it. Can you match that?"

They could. In a matter of seconds the three others were similarly enlensed. They had not previously perceived the need, but after Kat had pointed it out to them by demonstrating the manner of its satisfaction, their acquisition of full knowledge had been virtually instantaneous.

"Or this, then." Kat's Lens disappeared.

So did the other three. Each knew that no hint of this knowledge or of this power should ever be revealed; each knew that in any moment of stress the Lens of Civilization could be and would be hers.

"Logic, then, and by reason, not by chance." Kat changed her tactics. "I still get Dad. Everybody knows who works best with whom. You, Con, have tagged around after Worsel all your life. You used to ride him instead of a horse—"

"She still does," Kay snickered. "He pretty nearly split her in two a while ago in a seven-gravity pull-out, and she almost broke a toe when she kicked him for it."

"Worsel is nice," Con defended herself vigorously. "He's more human than most people, and more fun, as well as having infinitely more brains. And *you* can't talk, Kay—what anyone can see in that Nadreck, so cold-blooded that he freezes you even through armor at twenty feet—you'll get as cold and hard as he is if you don't—"

"And every time Cam gets within five hundred parsecs of Tregonsee she goes into silences with him, contemplating raptly the whichnesses of the why," Kathryn interrupted, forestalling recriminations. "So you see, by the process of elimination, Dad has got to be mine."

Since they could not all have him it was finally agreed that Kathryn's claim would be allowed and, after a great deal of discussion and argument, a tentative plan of action was developed. In due course, the *Dauntless* landed upon Tellus. The Kinnisons went to Wentworth Hall, the towering, chromium-and-glass home of the Tellurian cadets of the Galactic Patrol. They watched the impressive ceremonies of graduation. Then, as the new Lensmen marched out to the magnificent cadences of "Our Patrol," the Gray Lensman, leaving his wife and daughters to their own devices, made

his way to his Tellurian office in Prime Base.

"Lensman Kinnison, sir, by appointment," his secretary announced, and as Kit strode in Kinnison stood up and came to attention.

"Christopher Kinnison of Klovia, sir, reporting for duty." Kit saluted crisply.

The Co-ordinator returned the salute punctiliously. Then: "At rest, Kit. I'm proud of you, mighty proud. We all are. The women want to heroize you, but I had to see you first, to clear up a few things. An explanation, an apology, and, in a sense, commiseration."

"An apology, sir?" Kit was dumfounded. "Why, that's unthinkable—"

"For not graduating you in Gray. It has never been done, but that was not the reason. Your commandant, the Board of Examiners, and Port Admiral LaForge, all recommended it, agreeing that none of us is qualified to give you either orders or directions. I blocked it."

"Of course. For the son of the Co-ordinator to be the first Lensman to graduate Unattached would smell—especially since the fewer who know of my peculiar characteristics the better. That can wait, sir."

"Not too long, sir." Kinnison's smile was a trifle forced. "Here's your Release and your kit, and a request signed by the whole Galactic Council that you go to work on whatever it is that is going on. We rather think that it heads up somewhere in the Second Galaxy, but that is little more than a guess."

"I can start out from Klovia, then? Good—I can go home with you."

"That's the idea, and on the way there you can study the situation. For your information we have made up a series of tapes, carrying not only all the available data, but also our attempts at analysis and interpretation. Complete and up to date, except for one item which came in this morning . . . I can't figure out whether it means anything or not, but it should be inserted—" Kinnison paced the room, scowling.

"Might as well tell me. I'll insert it when I scan the tape."

"QX. I don't suppose that you have heard much about the unusual shipping trouble we have been hav-

ing, particularly in the Second Galaxy?"

"Rumor—gossip only. I'd rather have it straight."

"It's all on the tapes, so I'll give you the barest possible background. Losses are twenty-five percent above normal. A few highly peculiar derelicts have been found—peculiar in that they seem to have been wrecked by madmen. Not only wrecked, but gutted, and with every mark of identification obliterated. We can't determine even origin or destination, since the normal disappearances outnumber the abnormal ones by four to one. On the tapes this is lumped in with the other psychoses you'll learn about. But this morning they found another derelict, in which the chief pilot had scrawled 'WARE HELL HOLE IN SP' across a plate. Connection with the other derelicts, if any, is obscure. If the pilot was sane when he wrote that message, it means something—but nobody knows what. If he wasn't, it doesn't, any more than the dozens of obviously senseless—excuse me, I should say apparently senseless—messages which we have already recorded."

"Hm-m-m. Interesting. I'll bear it in mind and tape it in its place. But speaking of peculiar things, I've got one I wanted to discuss with you—getting my Release was such a shock that I almost forgot it. Reported it, but nobody thought it was anything important. Maybe . . . probably . . . it isn't. Tune your mind up to the top of the range . . . there, did you ever hear of a race that thinks upon that band?"

"I never did—it's practically unreachable. Why—have you?"

"Yes and no. Only once, and that only a touch. Or, rather, a burst; as though a hard-held mind-block had exploded, or the creature had just died a violent, instantaneous death. Not enough of it to trace, and I never found any more of it."

"Any characteristics? Bursts can be quite revealing at times."

"A few. It was on my last break-in trip in the Second Galaxy, out beyond Thrale—about here." Kit marked the spot upon a mental chart. "Mentality very high—precisionist grade—possibly beyond social needs, as the planet was a bare desert. No thought of cities. Nor of water, although both may have existed without appearing in that burst of thought. The thing's bodily structure was RTSL, to four places. No gross digestive tract—atmosphere-nourished or an energy-converter, perhaps. The sun was a blue giant. No spectral data, of course, but at a rough guess I'd say somewhere around class B5 or A0. Although the temperature was normal for him, it was quite evident that the planet would be unbearably hot for us. That's all I could get."

"That's a lot to get from one burst. It doesn't mean a thing to me right now—but I'll watch for a chance to fit it in somewhere."

How casually they dismissed as unimportant that cryptic burst of

thought! But if they both, right then, together, had been authoritatively informed that the description fitted exactly the physical form forced upon its denizens in its summer by the accurately-described, simply hellish climatic conditions obtaining during that season on noxious planet Ploor, the information would still not have seemed important to either of them—then.

"Anything else we ought to discuss before night?" The older Lensman went on without a break.

"Not that I know of."

"You said your Release was a shock. Ready for another one?"

"I can't think of a harder one. I'm braced—blast!"

"I have turned the office over to Vice Co-ordinator Maitland for the duration. I am authorized to tell you that Worsel, Nadreck, Tregonsee, and I have resumed our Unattached status and, while conducting our own various investigations, will be holding ourselves ready at all times for your call."

"That *is* a shock, sir. Thanks. I hadn't expected . . . it's really overwhelming. And you said something about *commiserating* me?" Kit lifted his red-thatched head—all of Clarrissa's children had inherited her startling hair—and gray eyes stared level into eyes of gray.

"In a sense, yes. You'll understand later. Well, you'd better go hunt up Chris and the kids. After the festivities are over—"

"I'd better cut them, hadn't I?" Kit asked, eagerly. "Don't you think it'd be better for me to get started right away?"

"Not on your life!" Kinnison demurred, positively. "Do you think that I want that mob of strawberry blondes to snatch me bald-headed? You're in for a large day and evening of lionization, so take it like a man. As I was about to say, as soon as the brawl is over tonight we'll all board the *Dauntless* and do a flit for Klovia, where I'll fit you out with everything you want. Until then, son—" Two big hands gripped.

"But I'll be seeing you around the Hall!" Kit exclaimed. "You can't—"

"No, I can't dodge the lionizing, either," Kinnison grinned, "but we won't be in a sealed and shielded room. So, son . . . I'm proud of you."

"Right back at you, big fellow—and thanks a million." Kit strode out and, a few minutes later, the Co-ordinator did likewise.

The "brawl," which was the gala event of the Tellurian social year, was duly enjoyed by all the Kinnisons. The *Dauntless* made an uneventful flight to Klovia. Arrangements were made. Plans, necessarily sketchy and elastic, were laid.

Two big, gray-clad Lensmen stood upon the deserted spacefield, between two blackly indetectable speedsters. Kinnison was massive, sure, calm with the poised calmness of maturity, experience, and power. Kit, with the broad shoulders and narrow waist of his years and training, was taut and tense, fiery, eager to come to grips with Civilization's foes.

"Remember, son," Kinnison said as the two gripped hands. "There are four of us old-timers, who have been through the mill, on call every second. If you can use any one of us or all of us, don't wait to be too sure—snap out a call."

"I know, Dad . . . thanks. The four best, ablest Lensmen that ever lived. One of you may make a strike before I do. In fact, with the thousands of leads we have, and with no way of telling how many of them are false—deliberately or otherwise—and with your vastly greater experience and knowledge, you probably will. So remember that it cuts both ways. If any of you can use me at any time, I'll come at max."

"QX. We'll get in touch from time to time, anyway. Clear ether, Kit!"

"Clear ether, Dad!" What a wealth of meaning there was in that low-voiced, simple exchange of the standard bon voyage!

For minutes, as his speedster flashed through space, Kinnison thought only of the boy. He knew exactly how he felt; he relived in memory the supremely ecstatic moments of his own first launching into space as a Gray Lensman. But Kit had the stuff—stuff which he, Kinnison, knew that he could know nothing about—and he had his own job to do. Therefore, methodically, like the old campaigner he was, he set about it.

II.

Worsel the Velantian, hard and durable and long-lived as Velantians are, had in twenty Tellurian years changed scarcely at all. As the first Lensman and the only Second-Stage Lensman of his race, the twenty years had been very fully occupied indeed.

He had solved the varied technological and administrative problems incident to the welding of Velantia into the structure of Civilization. He had worked at the many tasks which, in the opinion of the Galactic Council, fitted his peculiarly individual talents. In his "spare" time he had sought out in various parts of two galaxies, and had ruthlessly slain, widely-scattered groups of the Overlords of Delgon.

Continuously, however, he had taken an intense sort of godfatherly interest in the Kinnison children, particularly in Kit and in the youngest daughter, Constance; finding in the girl a mentality surprisingly akin to his own.

When Kinnison's call came he answered it. He was now out in space; not in the *Dauntless,* but in a ship of his own, under his own command. And what a ship! The *Velan* was manned entirely by beings of his own race. It carried Velantian air, at Velantian temperature and pressure. Above all, it was built and powered for inert maneuvering at the atrocious accelerations employed by the Velantians in their daily lives; and Worsel loved it with enthusiasm and elan.

He had worked conscientiously and well with Kinnison and with other entities of Civilization. He and they had all known, however, that he could work more efficiently

alone or with others of his own kind. Hence, except in emergencies, he had done so; and hence, except in similar emergencies, he would so continue to do.

Out in deep space, Worsel entwined himself, in a Velantian's idea of comfort, in an intricate series of figures-of-eight around a couple of parallel bars and relaxed in thought. There were insidious deviltries afoot, Kinnison had said. There were disaffections, psychoses, mass hysterias, and—Oh happy thought! —hallucinations. There were also certain revolutions and sundry uprisings, which might or might not be connected or associated with the disappearances of a considerable number of persons of note. In these latter, however, Worsel of Velantia was not interested. He knew without being told that Kinnison would pounce upon such blatant manifestations as those. He himself would work upon something much more to his taste.

Hallucination was Worsel's dish. He had been born among hallucinations, had been reared in an atmosphere of them. What he did not know about hallucinations could have been printed in pica upon the smallest one of his scales.

Therefore, isolating one section of his multicompartmented mind from all of the others and from any control over his physical self, he sensitized it to receive whatever hallucinatory influences might be abroad. Simultaneously he set two other parts of his mind to watch over the one to be victimized; to study and to analyze whatever figments of obtrusive mentality might be received and entertained.

Then, using all of his naturally tremendous sensitivity and reach, all of his Arisian supertraining, and the full power of his Lens, he sent his mental receptors out into space. And then, although the thought is staggeringly incomprehensible to any Tellurian or near-human mind, he *relaxed*. For day after day, as the *Velan* hurtled randomly through the void, he hung blissfully slack upon his bars, most of his mind a welter of the indescribable thoughts in which it is a Velantian's joy to revel.

Suddenly, after an unknown interval of time, a thought impinged: a thought under the impact of which Worsel's body tightened so convulsively as to pull the bars a foot out of true. Overlords! The unmistakable, the body-and-mind-paralyzing hunting call of the Overlords of Delgon!

His crew had not felt it yet, of course; nor would they feel it. If they should, they would be worse than useless in the conflict to come; for they could not withstand that baneful influence. Worsel could. Worsel was the only Velantian who could.

"Thought-screens all!" his commanding thought snapped out. Then, even before the order could be obeyed: "As you were!"

For the impenetrably shielded chambers of his mind told him immediately that this was no ordinary Delgonian hunting call; or rather,

that it was more than that. Much more.

Mixed with, superimposed upon the overwhelming compulsion which generations of Velantians had come to know so bitterly and so well, were the very things for which he had been searching—hallucinations! To shield his crew or, except in the subtlest possible fashion himself, simply would not do. Overlords everywhere knew that there was at least one Velantian Lensman who was mentally their master; and, while they hated this Lensman tremendously, they feared him even more. Therefore, even though a Velantian was any Overlord's choicest prey, at the first indication of an ability to disobey their commands the monsters would cease entirely to radiate; would withdraw at once every strand of their far-flung mental nets into the fastnesses of their superbly hidden and indetectably shielded cavern.

Therefore Worsel allowed the inimical influence to take over, not only the total minds of his crew, but the unshielded portion of his own as well. And stealthily, so insidiously that no mind affected could discern the change, values gradually grew vague and reality began to alter.

Loyalty dimmed, and *esprit de corps*. Family ties and pride of race waned into meaninglessness. All concepts of Civilization, of the Galactic Patrol, degenerated into strengthless gossamer, into oblivion. And to replace those hitherto mighty motivations there crept in an overmastering need for, and the exact method of obtainment of, whatever it was that was each Velantian's deepest, most primal desire. Each crewman stared into an individual visiplate whose substance was to him as real and as solid as the metal of his ship had ever been; each saw upon that plate whatever it was that, consciously or unconsciously, he wanted to see. Noble or base, lofty or low, intellectual or physical, spiritual or carnal, it made no difference to the Overlords. Whatever each victim most wanted was there.

No figment was, however, even to the Velantians, actual or tangible. It was a picture upon a plate, transmitted from a well-defined point in space. There, upon that planet, was the actuality, eagerly awaited; toward and to that planet must the *Velan* go at maximum blast. Into that line and at that blast, then, the pilots set their vessel without orders, and each of the crew saw upon his nonexistent plate that she had so been set. If she had not been, if the pilots had been able to offer any resistance, the crew would have slaughtered them out of hand. As it was, all was well.

And Worsel, watching the affected portion of his mind accept these hallucinations as truths and admiring unreservedly the consummate artistry with which the work was being done, was well content. He knew that only a hard, solidly-driven, individually probing beam could force him to reveal the fact that a portion of his mind and all of his bodily control were being withheld; he knew that unless he

made a slip no such investigation was to be expected. He would not slip.

No human or near-human mind can really understand how the mind of a Velantian works. A Tellurian can, by dint of training, learn to do two or more unrelated things simultaneously. But neither is done very well and both must be more or less routine in nature. To perform any original or difficult operation successfully he must concentrate upon it, and he can concentrate upon only one thing at a time. A Velantian, however, can and does concentrate upon half-a-dozen totally unrelated things at once; and, with his multiplicity of arms, hands, and eyes, he can perform simultaneously an astonishing number of completely independent operations.

The Velantian is, however, in no sense such a multiple personality as would exist if six or eight human heads were mounted upon one body. There is no joint tenancy about it. There is only one ego permeating all those pseudoindependent compartments; no contradictory orders are, or ordinarily can be, sent along the bundled nerves of the spinal cord. While individual in thought and in the control of certain actions, the mind-compartments are basically, fundamentally, one mind.

Worsel had progressed beyond his fellows. He was different; unique. In fact, the perception of the need of the ability to isolate certain compartments of his mind, to separate them completely from his real ego, was one of the things which had enabled him to become the only Second-Stage Lensman of his race.

L2 Worsel, then, held himself aloof and observed appreciatively everything that went on. More, he did a little hallucinating of his own. Under the Overlords' compulsion he was supposed to remain motionless, staring raptly into an imaginary visiplate at an orgiastic saturnalia designed to make even his burly ego quail. Therefore, as far as the occupied portion of his mind and through it the Overlords were concerned, he did so. Actually, however, his body moved purposefully about, under the direction only of his own grim will; moved to make ready against the time of landing.

For Worsel knew that his opponents were not fools. He knew that they reduced their risks to the irreducible minimum. He knew that the mighty *Velan,* with her prodigious weaponry, would not be permitted to be within even extreme range of the cavern, if the Overlords could possibly prevent it, when that cavern's location was revealed. His was the task to see to it that she was not only within range, but was at the very portal.

The speeding spaceship approached the planet—went inert—matched the planetary intrinsic—landed. Her air locks opened. Her crew rushed out headlong, sprang into the air, and arrowed away *en masse.* Then Worsel, Grand Master of Hallucinations, went blithely but intensely to work.

Thus, although he stayed at the *Velan's* control board instead of

joining the glamoured Velantians in their rush over the unfamiliar terrain, and although the huge spaceship lifted lightly into the air and followed them, neither the fiend-possessed part of Worsel's mind, nor any of his fellows, nor through them the many Overlords, knew that either of those two things was happening. To that part of his mind Worsel's body was, under full control, flying along upon tireless wings in the midst of the crowd; to it and to all of the other Velantians and hence to the Overlords the *Velan* lay motionless and deserted upon the rocks far below and behind them. They watched the vessel diminish in apparent size in the distance; they saw it vanish beyond the horizon!

This was eminently tricky work, necessitating as it did such nicety of synchronization with the Delgonian's own compulsions as to be indetectable even to the monsters themselves. Worsel was, however, an expert, one of the Universe's best; he went at the task not with any doubt whatever as to his ability to carry it through, but only with an uncontrollably shivering physical urge to come to grips with the hereditary enemies of his race.

The fliers shot downward, and as a boulder-camouflaged entrance yawned open in the mountain's side Worsel closed up and shot out a widely enveloping zone of thought-screen. The Overlords' control vanished. The Velantians, realizing instantaneously what had happened, flew madly back to their ship. They jammed through the air locks, flashed to their posts. The cavern's gates had closed by then, but the monsters had no screen fit to cope with the *Velan's* tremendous batteries. Down they went. Barriers, bastions, and a considerable portion of the mountain's face flamed away in fiery vapor or flowed away in molten streams. Through reeking atmosphere, over red-hot debris, the armored Velantians flew to the attack.

The Overlords had, however, learned. This cavern, as well as being hidden, was defended by physical, as well as mental, means. There were inner barriers of metal and of force, there were armed and armored defenders who, dominated completely by the monsters, fought with the callous fury of the robots which in effect they were. Nevertheless, against all opposition, the attackers bored relentlessly in. Heavy semiportables blazed, hand-to-hand combat raged in the narrow confines of that noisome tunnel. In the wavering, glaring light of the contending beams and screens, through the hot and rankly stinking steam billowing away from the reeking walls, the invaders fought their way. One by one and group by group the defenders died where they stood and the Velantians drove onward over their burned and dismembered bodies.

Into the cavern at last. To the Overlords. Overlords! They, who for ages had preyed upon generation after generation of helpless Velantians, torturing their bodies to the point of death and then devouring ghoulishly the life-forces which

their mangled bodies could no longer retain!

Worsel and his crew threw away their DeLameters. Only when it is absolutely necessary does any Velantian use any artificial weapon against any Overlord of Delgon. He is too furious, too berserk, to do so. He is scared to the core of his being; the cold grue of a thousand fiendishly eaten ancestors has bred that fear into the innermost atoms of his chemistry. But against that fear, negating and surmounting it, is a hatred of such depth and violence as no human being has ever known; a starkly savage hatred which can be even partially assuaged only by the ultimate of violences—by rending his foe apart member by member; by actually feeling the Delgonian's life depart under gripping hands and tearing talons and constricting body and shearing tail.

It is best, then, not to go into too fine detail as to this conflict. Since there were almost a hundred of the Delgonians—insensately vicious fighters when cornered—and since their physical make-up was very similar to the Velantians' own, many of Worsel's troopers died. But since the *Velan* carried over fifteen hundred and since less than half of her personnel could even get into the cavern, there were plenty of them left to operate and to fight the spaceship.

Worsel took great care that the opposing commander was not killed with his minions. The fighting over, the Velantians chained this sole survivor into one of his own racks and stretched him out into immobility. Then, restraining by main strength the terrific urge to put the machine then and there to its fullest ghastly use, Worsel cut his screen, threw a couple of turns of tail around a convenient anchorage, and faced the Boskonian almost nose to nose. Eight weirdly stalked eyes curled out as he drove a probing thought-beam against the monster's shield.

"I could use this—or this—or this," Worsel gloated. As he touched various wheels and levers the chains hummed slightly, sparks flashed, the rigid body twitched. "I am not going to, however—yet. While you are still sane I want to take and I shall take your total knowledge."

And face to face, eye to eye, brain to brain, that silently and motionlessly cataclysmic battle was joined.

As has been said, Worsel had hunted down and had destroyed many Overlords. He had hunted them, however, like vermin. He had destroyed them with duodec bombs and with primary or secondary beams; or, at closest hand, with talons, teeth, and tail. He had not engaged an Overlord mind to mind for over twenty Tellurian years; not since he and Nadreck of Palain VII had captured alive the leaders of those who had been preying upon Helen's matriarchs and warring upon Civilization from their cavern upon Lyrane II. Nor had he ever dueled one mentally to death without powerful support; Kinni-

son or some other Lensman had always been near by.

But Worsel would need no help. He was not shivering in eagerness now. His body was as still as the solid rock upon which most of it lay; every chamber and every faculty of his mind was concentrated upon battering down or cutting through the Overlords' stubbornly-held shields.

Brighter and brighter glowed the Velantian's Lens, flooding the gloomy cave with pulsating polychromatic light. Alert for any possible trickery, guarding intently against any possibility of riposte or of counterthrust, Worsel leveled bolt after bolt of mental force. He surrounded the monster's mind with a searing, constricting field. He squeezed: relentlessly and with appalling power.

The Overlord was beaten. He, who had never before encountered a foreign mind or a vital force stronger than his own, knew that he was beaten. He knew that at long last he had met that half-fabulous Velantian Lensman with whom not one of his monstrous race could cope. He knew starkly, with the chilling, numbing terror possible only to such a being in such a position, that he was doomed to die the same hideous and long-drawn-out death which he had dealt out to so many others. He did not read into the mind of the bitterly vengeful, the implacably ferocious Velantian any more mercy or any more compunction than was actually there. He knew perfectly that of either there was no slightest trace. Knowing these things with the blackly appalling certainty that was his, he quailed.

There is an old but cogent saying that the brave man dies only once, the coward a thousand times. That Overlord, during that lethal combat, died more times than it is pleasant to contemplate. Nevertheless, he fought. A cornered rat will fight, and the Delgonian was not a rat—not exactly, that is, an ordinary rat. His mind was competent, keen, powerful, and utterly unscrupulous; and he brought to the defense of his beleaguered ego every resource of skill and of trickery and of sheer power at his command—in vain. Deeper and deeper, in spite of everything he could do, the relentless Lensman squeezed and smashed and cut and pried and bored; little by little the Overlord gave mental ground.

"This station is here . . . this staff is here . . . *I* am here, then . . . to wreak damage . . . all possible damage . . . to the commerce . . . and to the personnel of . . . the Galactic Patrol . . . and Civilization in every aspect—" the Overlord admitted haltingly as Worsel's pressure became intolerable; but such admissions, however unwillingly made or however revealing in substance, were not enough.

Worsel wanted, and would be satisfied with nothing less than, his enemy's total knowledge. Hence he maintained his assault until, unable longer to withstand the frightful battering, the Overlord's barriers went completely down; until every convolution of his brain

and every track of his mind lay open, helplessly exposed to Worsel's poignant scrutiny. Then, scarcely taking time to gloat over his victim, Worsel did scrutinize.

Period.

Hurtling through space, toward a definite objective now, Worsel studied and analyzed some of the things which he had just learned. Worsel was not surprised that this Overlord had not known any of his superior officers in things or enterprises Boskonian; that he did not consciously know even that he had been obeying orders or that he had superiors. That technique, by this time, was familiar enough. The Boskonian psychologists were able operators; to attempt to unravel the unknowable complexities of their subconscious compulsions would be a sheer waste of time.

What the Overlords had been doing, however, was clear enough. That outpost had indeed been wreaking havoc with Civilization's commerce. Ship after ship had been lured from its course; had been compelled to land upon this barren planet. Some of those vessels had been destroyed; some of them had been stripped and rifled as though by pirates of old; some of them had been set upon new courses with hulls, mechanical equipment, and cargoes untouched. No crewman or passenger, however, escaped unscathed; even though only ten percent of them died in the Overlordish fashion which Worsel knew so well.

The Overlord himself had wondered why they had not been able to kill them all. He knew that such forbearance was unnatural, was against all instinct and training. He knew that they wanted, intensely enough, to kill every one of their victims; that their greedy lust for life-force simply could not be sated as long as life-force was to be had. He knew only that something, none of them knew what, limited their actual killing to ten percent of the bag.

Worsel grinned wolfishly at that thought, even while he was admiring the quality of the psychology which could impress such a compulsion as that upon such rapacious hellions as those. That was the work of the Boskonian higher-ups, who knew that ten percent was the limit above which the deaths would have been too revealing to the statisticians of the Galactic Patrol.

The other ninety percent, however, the Delgonians had "played with"—a procedure which, although less satisfying to the Overlords than the ultimate treatment, was not very different in so far as the victims' egos were concerned. For none of them emerged from the ordeal with any memory of what had happened, or of what or who he had ever been. They were not all completely mad; some were only partially so. All had, however, been—altered. Changed; shockingly transformed. No two were alike. Each Overlord, it appeared, had striven with all of his ultra-hellish ingenuity to excel his fellows in the manufacture of an outrageous something whose like had never

been seen in or upon any land or sea or air or throughout any reach of space.

These and many other facts and items Worsel had studied carefully. He was now heading for the region in which the Patrol's computers had figured that the "Hell Hole in Space" must lie. The planet he had just left, the Overlords he had just slain, were not the original Hell Hole; could have had nothing to do with it. Too far apart—they were not in the same possible volume of space.

Worsel knew now, though, what the Hell Hole in Space really was. It was a cavern of Overlords. It simply couldn't be anything else. And, in himself and his crew and his mighty *Velan* he, Worsel of Velantia, Overlord-slayer par excellence of two galaxies, had in ample measure everything it took to extirpate any number of Overlords. With what he had just learned and with what he was so calmly certain he could do, the Hell Hole in Space would take no more toll. Wherefore Worsel, coiled loosely around his hard bars, relaxed in happily planful thought. And in a couple of hours a solid, clear-cut thought impinged upon his Lens.

"Worsel! Con calling. What goes on there, fellow old snake? You've stuck that sharp tail of yours into some of my business—I hope!"

III.

Each of the Second-Stage Lensmen had exactly the same facts, the same data, upon which to theorize and from which to draw conclusions. Each had shared his experiences, his findings, and his deductions and inductions with all of the others. They had discussed minutely, in wide-open four-ways, every phase of the Boskonian problem. Nevertheless the approach of each to that problem and the point of attack chosen by each was individual and characteristic.

Kimball Kinnison was by nature forthright; direct. As has been seen, he could use the approach circuitous if necessary, but he much preferred and upon every possible occasion employed the approach direct. He liked plain, unambiguous clues much better than obscure ones; the more obvious and factual the clue was, the better he liked it.

He was now, therefore, heading for Antigan IV, the scene of the latest and apparently the most outrageous of a long series of crimes of violence. He didn't know much about it; the request had come in through regular channels, not via Lens, that he visit Antigan and take personal charge of the investigation of the supposed murder of the Planetary President.

As his speedster flashed through space the Gray Lensman mulled over in his mind the broad aspects of this crime wave. It was spreading far and wide, and the wider it spread and the intenser it became the more vividly one salient fact stuck out. Selectivity—distribution. The solar systems of Thrale, Velantia, Tellus, Klovia, and Palain

had not been affected. Thrale, Tellus, and Klovia were full of Lensmen. Velantia, Rigel, Palain, and a good part of the time Klovia, were the working headquarters of Second-Stage Lensmen. It seemed, then, that the trouble was roughly in inverse ratio to the numbers or the abilities of the Lensmen in the neighborhood. Something, therefore, that Lensmen—particularly Second-Stage Lensmen—were bad for. That was true, of course, for all crime. Nevertheless, this seemed to be a special case.

And when he reached his destination he found out that it was. The planet was seething. Its business and its everyday activities seemed to be almost paralyzed. Martial law had been declared; the streets were practically deserted except for thick-clustered groups of heavily-armed guards. What few people were abroad were furtive and sly; slinking hastily along with their fear-filled eyes trying to look in all directions at once.

"QX, Wainwright, go ahead," Kinnison directed brusquely when, alone with the escorting Patrol officers in a shielded car, he was being taken to the Capitol grounds. "There's been too much secrecy—pussyfooting—about the whole affair. Spill it, please."

"Very well, sir," and Wainwright told his tale. Things had been happening for months. Little things, but disturbing. Then murders and kidnapings and unexplained disappearances had begun to increase. The police forces had been falling farther and farther behind. The usual cries of incompetence and corruption had been raised, only further to confuse the issue. Circulars—dodgers—handbills appeared all over the planet; from where nobody knew. The keenest detectives could find no clue to papermakers, printers, or distributors. The usual inflammatory, subversive propaganda—"Down with the Patrol!" "Give us back our freedom!" and so on—but, because of the high tension already prevailing, the stuff had been unusually effective in breaking down the morale of the citizenry as a whole.

"Then this last thing. For two solid weeks the whole world was literally plastered with the announcement that at midnight on the thirty-fourth of Dreel—you're familiar with our calendar, I think?—President Renwood would disappear. Two weeks warning—daring us." Wainwright got that far and stopped.

"Well, go on. He disappeared, I know. How? What did you fellows do to prevent it? Why all the secrecy?"

"If you insist, I'll have to tell you, of course, but I'd rather not." Wainwright flushed uncomfortably. "You wouldn't believe it. Nobody could. I wouldn't believe it myself if I hadn't been there. I'd rather you'd wait, sir, and let the Vice President tell you; in the presence of the Treasurer and the others who were on duty that night."

"Um-m-m . . . I see . . . maybe." Kinnison's mind raced. "That's

why nobody would give me details? Afraid I wouldn't believe it . . . that I'd think they'd been—" He stopped. "Hypnotized" would have been the next word, but that would have been jumping at conclusions. Even if true, there was no sense in airing that hypothesis —yet.

"Not afraid, sir. They *knew* that you wouldn't believe it."

After entering Government Reservation they went, not to the president's private quarters, but into the Treasury and down into the subbasement housing the most massive, the most utterly impregnable vault of the planet. There the nation's most responsible officers told Kinnison, with their entire minds as well as their tongues, what had happened.

Upon that black day business had been suspended. No visitors of any sort had been permitted to enter the Reservation. No one had been allowed to approach the president except old and trusted officers about whose loyalty there could be no question. Airships and spaceships had filled the sky. Troops,

armed with semiportables or manning fixed-mount heavy stuff, had covered the grounds. At five minutes before midnight Renwood, accompanied by four secret service men, had entered the vault, which was thereupon locked by the treasurer. All the cabinet members saw them go in, as did the attendant corps of specially-selected guards. Nevertheless, when the treasurer opened the vault at five minutes after midnight, the five men were gone. No trace of any one of them had been found from that time on.

"And that—every word of it—is TRUE!" the assembled minds yelled as one, all unconsciously, into the mind of the Lensman.

During all this telling Kinnison had been searching mind after mind; inspecting each minutely for the telltale marks of mental surgery. He found none. No hypnosis. This thing had happened, exactly as they told it. Now, convinced of that fact, his eyes clouded with foreboding, he sent out his sense of perception and studied the vault itself. Millimeter by cubic millimeter he scanned the innermost details of its massive structure—the concrete, the neo-carballoy, the steel, the heat-conductors and the closely-spaced gas cells. He traced the intricate wiring of the networks of alarms. Everything was sound. Everything functioned. Nothing had been disturbed.

The sun of this system, although rather on the small side, was intensely hot; this planet, Four, was a long way out. Pretty close to Cardynge's limit . . . or the Boskonians had improved their technique—tightened up their controls. A tube, of course . . . for all the tea in China it had to be a tube. Kinnison sagged; for the first time in his life the indomitable Gray Lensman showed his years and more.

"I know that it happened." His voice was grim, quiet, as he spoke to the still protesting men. "I also know how it was done, but that's all."

"HOW?" they demanded, practically in one voice.

"A hyperspatial tube," and Kinnison went on to explain, as well as he could, the functioning of a thing which could not be grasped intrinsically by any nonmathematical three-dimensional mind.

"But what can we or you or anybody else *do* about it?" the treasurer asked, numbly.

"Nothing whatever." Kinnison's voice was flat. "When it's gone, it's gone. Where does the light go when a lamp goes out? No more trace. No more way—no way whatever—of tracing it. Hundreds of millions of planets in this galaxy, as many in the Second. Millions and millions of galaxies. All that in one Universe—our own universe. And there are an infinite number—too many to be expressed, let alone to be grasped—of universes, side by side, like pages in a book except thinner, in the hyperdimension. So you can figure out for yourselves the chances of ever finding either President Renwood or the Boskonians who took

him—so close to zero as to be indistinguishable from zero absolute."

The treasurer was crushed. "Do you mean to say that there is no protection at all from this thing? That they can keep on doing away with us just as they please? The nation is going mad, sir, day by day—one more such occurrence and we will be a planet of maniacs."

"Oh, no—I didn't say that." The tension lightened. "Just that we can't do anything about the president and his aides. The tube can be detected while it is in place, and anyone coming through it can be shot as soon as he can be seen. What you need is a couple of Rigellian Lensmen, or Ordoviks. I'll see to it that you get them. I don't think, with them here, that they will even try to repeat." He did not add what he knew somberly to be a fact, that the enemy would go elsewhere, to some other planet not protected by a Lensman able to perceive the intangible structure of a sphere of pure force.

Frustrate, the Lensman again took to space. It was terrible, this thing of having everything happening where he wasn't, and when he got there having nothing left to work on. Hit-and-run—stab-in-the-back—how could a man fight something that he couldn't see or sense or feel or find? But this chewing his fingernails to the elbow wasn't getting him anywhere, either; he'd have to find something that he *could* stick a tooth into. What?

All former avenues of approach were blocked; he was sure of that. The Boskonians, who were now in charge of things, could really think. No underling would know anything about any one of them except at such times and places as the directors chose, and those conferences would be as nearly detection-proof as they could be made. What to do?

Easy. Catch a big operator in the act. He grinned wryly to himself. Easy to say, but not—However, it wasn't impossible. The Boskonians were not supermen—they didn't have any more jets than he did. Put himself in the other fellow's place—what would he do if he were a Boskonian big shot? He had had quite a lot of experience in the role. Were there any specific groups of crimes which revealed techniques similar to those which he himself would use in like case?

He, personally, preferred to work direct and to attack in force. At need, however, he had done a smooth job of boring from within. In the face of the Patrol's overwhelming superiority of armament, especially in the First Galaxy, they would have to bore from within. How? By what means? He was a Lensman; they were not. Jet back! Or were they, perhaps? How did he know that they weren't? Maybe they were, by this time. Fossten the renegade Arisian—No use kidding himself; Fossten might have known as much about the Lens as Mentor himself, and might have developed an organization that even Mentor didn't know anything about. Or Mentor might be figuring that it would be good for what ailed a

certain fat-headed Gray Lensman to have to dope this out for himself. QX.

He shot a call to Vice Co-ordinator Maitland, who was now in complete charge of the office which Kinnison had temporarily abandoned.

"Cliff? Kim. Just gave birth to an idea." He explained rapidly what the idea was. "Maybe nothing to it, but we'd better get up on our toes and find out. You might suggest to the boys that they check up here and there, particularly around the rough spots. If any of them find any trace anywhere of off-color, sour, or even slightly rancid Lensmanship, with or without a Lens appearing in the picture, burn a hole in space getting it to me. QX? . . . Thanks."

Viewed in this new perspective, Renwood of Antigan IV might have been neither a patriot nor a victim, but a saboteur. The tube could have been a prop, used deliberately to cap the mysterious climax. The four honest and devoted guards were the real casualties. Renwood—or whoever he was—having accomplished his object of undermining and destroying the whole planet's morale, might simply have gone elsewhere to continue his nefarious activities. It was fiendishly clever. That spectacularly theatrical finale was certainly one for the book. The whole thing, though, was very much of a piece in quality of workmanship with what he had done in becoming the Tyrant of Thrale. Farfetched? No. He had already denied in his thoughts that the Boskonian operators were supermen. Conversely, he wasn't, either. He would have to admit that they might very well be as good as he was; to deny them the ability to do anything which he himself could do would be sheer stupidity.

Where did that put him? On Radelix, by Klono's golden gills! A good-sized planet. Important enough, but not too much so. People human. Comparatively little hell being raised there—yet. Very few Lensmen, and Gerrond the top. Hm-m-m. Gerrond. Not too bright, as Lensmen went, and inclined to be a bit brass-hattish. To Radelix, by all means, next.

He went to Radelix, but not in the *Dauntless* and not in gray. He was a passenger upon a luxury liner, a writer in search of local color for another saga of the spaceways. Sybly Whyte—one of the Patrol's most carefully-established figments—had a bulletproof past. His omnivorous interest and his uninhibited nosiness were the natural attributes of his profession—everything is grist which comes to an author's mill.

Sybly Whyte then prowled about Radelix. Industriously and, to some observers, pointlessly. He and his red-leather notebook were apt to be seen anywhere at any time, day or night. He visited spaceports, he climbed through freighters, he lost small sums in playing various games of so-called chance in spacemen's dives. Upon the other hand, he truckled assiduously to the social

elite and attended all functions into which he could wangle or could force his way. He made a pest of himself in the offices of politicians, bankers, merchant princes, tycoons of business and manufacture, and all other sorts of greats.

He was stopped one day in the outer office of an industrial potentate. "Get out and stay out," a peg-legged guard told him. "The boss hasn't read any of your stuff, but I have, and neither of us wants to talk to you. Data, huh? What do you need of data on atomic cats and bulldozers to write them space operas of yours? Why don't you get a roustabout job on a freighter and learn something about what you're trying to write about? Get yourself a real space tan instead of that imitation you got under a lamp; work some of that lard off of your carcass!" Whyte was definitely fatter than Kinnison had been; and, somehow, softer; he peered owlishly through heavy lenses which, fortunately, did not interfere with his sense of perception. "Then maybe some of your tripe will be half-fit to read—beat it!"

"Yes, sir. Thank you, sir; very much, sir." Kinnison bobbed obsequiously and scurried out, writing industriously in his notebook the while. He had, however, found out what he wanted to know. The boss was nobody he was looking for.

Nor was an eminent statesman whom he buttonholed at a reception. "I fail to see, sir, entirely, any point in your interviewing *me,*" that worthy informed him, frigidly. "I am not, I am . . . uh . . . sure, suitable material for any opus upon which you may be at work."

"Oh, you can't ever tell, sir," Kinnison said. "You see, I never know who or what is going to get into any of my stories until after I start to write it, and sometimes not even then." The statesman glared and Kinnison retreated in disorder.

To stay in character Kinnison actually wrote a story while upon Radelix; a story which was later acclaimed as one of Sybly Whyte's best.

"Qadgop the Mercotan slithered flatly around the after-bulge of the tranship. One claw dug into the meters-thick armor of pure neutronium, then another. Its terrible xmexlike snout locked on. Its zymolosely polydactile tongue crunched out, crashed down, rasped across. *Slurp! Slurp!* At each abrasive stroke the groove in the tranship's plating deepened and Qadgop leered more fiercely. Fools! Did they think that the airlessness of absolute space, the heatlessness of absolute zero, the yieldlessness of absolute neutronium, could stop QADGOP THE MERCOTON? And the stowaway, that human wench Cynthia, cowering in helpless terror just beyond this thin and fragile wall—" Kinnison was tapping merrily and verbosely along, at a cento a word, when his first real clue developed.

A yellow "attention" light gleamed upon his visiphone panel,

a subdued chime gave notice that a message of importance was about to be broadcast to the world. Kinnison-Whyte flipped his switch and the stern face of the Provost Marshal appeared upon the screen.

"Attention, please," the image spoke. "Every citizen of Radelix is urged to be upon the lookout for the source of certain inflammatory and subversive literature which is beginning to appear in various cities of this planet. Our officers cannot be everywhere at once; you citizens are. It is hoped that by the aid of your vigilance this threat to our planetary peace and security can be removed before it becomes really serious; that we can avoid the imposition of martial law."

This message, while not of extreme or urgent import to most Radeligians, held for Kinnison a profound and unique meaning. He was right. He had deduced the thing one hundred percent. He knew what was going to happen next, and how; he knew that neither the law-enforecement officers of Radelix nor its massed citizenry could stop it. They could not even impede it. A force of Lensmen could stop it—but that would not get the Patrol anywhere unless they could capture or kill the beings really responsible for what was done. To alarm them would not do.

Whether or not he could do much of anything before the grand climax depended upon a lot of factors. Upon what that climax was; upon who was threatened with what; upon whether or not the threatened one was actually a Boskonian. A great deal of investigation was indicated.

If the enemy were going to repeat, as seemed probable, the president would be the victim. If he, Kinnison, could not get a line upon the higher-ups before the plot came to a head, he would have to let it devolop right up to the point of disappearance; and for Whyte to appear upon the scene at that time would be to attract undesirable attention. No—by that time he must already have been kicking around underfoot long enough to have become an unnoticeable fixture.

Wherefore he moved into quarters as close to the Executive Offices as he could possibly get; and in those quarters he worked openly and wordily at the bringing of the affair of Qadgop and the beautiful-but-dumb Cynthia to a satisfactory conclusion.

IV.

In order to understand these and subsequent events it is necessary to cut back briefly some twenty-odd years, to the momentous interview upon chill, dark Onlo between monstrous Kandron and his superior in affairs Boskonian, the unspeakable Alcon, Tyrant of Thrale. At almost the end of that interview, when Kandron had suggested the possibility that his own base had perhaps been vulnerable to Star A Star's insidious manipulations:

"Do you mean to admit that *you* may have been invaded and

searched—tracelessly?" Alcon fairly shrieked the thought.

"Certainly," Kandron replied, coldly. "While I do not believe that it has been done, the possibility must be conceded. What we could do we have done, but what science can do science can circumvent. It is a virtual certainty that it is not Onlo and I who are their prime objectives, but Thrale and you. Especially you."

"You may be right. With no data whatever upon who or what Star A Star really is, with no tenable theory as to how he could have done what actually has been done, speculation is idle." Thus Alcon ended the conversation and, almost immediately, went back to Thrale.

After the Tyrant's departure Kandron continued to think, and the more he thought the more uneasy he became. It was undoubtedly true that Alcon and Thrale were the Patrol's prime objectives. But, those objectives attained, was it reasonable to suppose that he and Onlo would be spared? It was not. Should he warn Alcon further? He should not. If the Tyrant, after all that had been said, could not see the danger he was in, he was not worth saving. If he preferred to stay and fight it out, that was his lookout. Kandron would take no chances with his own extremely valuable life.

Should he warn his own men? How could he? They were able and hardened fighters all; no possible warning could make them defend their fortresses and their lives any more efficiently than they were already prepared to do; nothing he could say would be of any use in preparing them for a threat whose basic nature, even, was completely unknown. Furthermore, this hypothetical invasion probably had not happened and very well might not happen at all, and to flee from an imaginary foe would not rebound to his credit.

No. As a personage of large affairs, not limited to Onlo, he would be called elsewhere. He would stay elsewhere until after whatever was going to happen had happened. If nothing happened during the ensuing few weeks, he would return from his official trip and all would be well.

He inspected Onlo thoroughly, he cautioned his officers repeatedly and insistently to keep alert against every conceivable emergency while he was so unavoidably absent. Then he departed, with a fleet of vessels manned by hand-picked crews, to a long-prepared and hitherto secret retreat.

From that safe place he watched, through the eyes and the instruments of his skilled observers, everything that occurred. Thrale fell, and Onlo. The Patrol triumphed. Then, knowing the full measure of the disaster and accepting it with the grim passivity so characteristic of his breed, Kandron broadcast certain signals and one of his—and Alcon's—superiors got in touch with him. He reported concisely. They conferred. He was given orders which were to keep

him busy for over twenty Tellurian years.

He knew now that Onlo had been invaded, tracelessly, by some feat of mentality beyond comprehension and almost beyond belief. He knew that Onlo had fallen without any of its defenders having energized a single one of their gigantic engines of war. The fall of Thrale, and the manner of that fall's accomplishment, were plain enough. Human stuff. The work, undoubtedly, of human Lensmen; perhaps the work of the human Lensman who was so frequently associated with Star A Star.

But Onlo! Kandron himself had set those snares along those intricately zigzagged communications lines; he knew their capabilities. Kandron himself had installed Onlo's blocking and shielding screens; he knew their might. He knew, since no other path existed leading to Thrale, that those lines had been followed and those screens had been penetrated, and all without setting off a single alarm. Those things had actually happened. Hence Kandron set his stupendous mind to the task of envisaging what the being must be, mentally, who could do them; what the mind of this Star A Star—it could have been no one else—must in actuality be.

He succeeded. He deduced Nadreck of Palain VII, practically *in toto;* and for the Star A Star thus envisaged he set traps throughout both galaxies. They might or might not kill him. Killing him immediately, however, was not really of the essence; that matter could wait until he could give it his personal attention. The important thing was to see to it that Star A Star could never, by any possible chance, discover a true lead to any high Boskonian.

Sneeringly, gloatingly, Kandron issued orders; then flung himself with all his zeal and ability into the task of reorganizing the shattered fragments of the Boskonian Empire into a force capable of wrecking Civilization.

Thus it is not strange that for more than twenty years Nadreck of Palain VII made very little progress indeed. Time after time he grazed the hot edge of death. Indeed, it was only by the exertion of his every iota of skill, power, and callous efficiency that he managed to survive. He struck a few telling blows for Civilization, but most of the time he was strictly upon the defensive. Every clue that he followed, it seemed, led subtly into a trap; every course he pursued ended, always figuratively and all too often literally, in a cul-de-sac filled with semiportable projectors all agog to blast him out of the ether.

Year by year he became more conscious of some imperceptible, indetectable, but potent foe, an individual enemy obstructing his every move and determined to make an end of him. And year by year, as material accumulated, it became more and more certain that the inimical entity was in fact Kandron, once of Onlo.

When Kit went into space, then, and Kinnison called Nadreck into consultation the usually reticent and unloquacious Palainian was ready to talk. He told the Gray Lensman everything he knew, everything he deduced or suspected about the ex-Onlonian chieftain.

"Kandron of Onlo!" Kinnison exploded, so violently as to sear the subether through which the thought passed. "Holy Klono's brazen bowels! And you can sit there on your spiny tokus and tell me that Kandron got away from you back there? And that you knew it, and not only didn't do a thing about it yourself, but didn't even tell me or anybody else about it, so that we could take steps?"

"Certainly. Why take steps before they become necessary?" Nadreck was entirely unmoved by the Tellurian's passion. "My powers are admittedly small, my intellect feeble. However, even to me it was clear then and it is clear now that Kandron was then of no importance. My assignment was to reduce Onlo. I reduced it. Whether or not Kandron was there at the time did not then have and cannot now have anything to do with that task. Kandron, personally, is another, an entirely distinct problem."

Kinnison swore a blistering deep-space oath; then, by main strength, shut himself up. Nadreck wasn't human; there was no use even trying to judge him by human or near-human standards. He was fundamentally, incomprehensibly, and radically different. And it was just as well for humanity that he was. For if his hellishly able race had possessed the characteristically human abilities, in addition to their own, Civilization would of necessity have been basically Palainian instead of basically human, as it now is. "QX, ace," he growled, finally. "Skip it."

"But Kandron has been hampering my activities for years, and, now that you also have become interested in his operations against us, he has become a factor of which cognizance should be taken," Nadreck went imperturably on. He could no more understand Kinnison's viewpoint than the Tellurian could understand his. "With your permission, therefore, I shall find —and slay—this Kandron."

"Go to it, little chum," Kinnison sighed, bitingly and uselessly. "Clear ether."

While this conference was taking place, Kandron reclined in a bitterly cold, completely unlighted room of his headquarters and indulged in a little gloating concerning the predicament in which he was keeping Nadreck of Palain VII, who was, in all probability, the once-dreaded Star A Star of the Galactic Patrol. It was true that THE Lensman was still alive. He would probably, Kandron mused quite pleasurably, remain alive until he himself could find the time to attend to him in person. He was an able operator, but one presenting no real menace, now that he was known and understood. There were other things more pressing, just as there had been ever since

the fall of Thrale. The revised Plan was going nicely, and as soon as he had resolved that human thing—The Ploorans had suggested . . . could it be possible, after all, that Nadreck of Palain was not he who had been known so long only as Star A Star? That the human factor was actually—

Through the operation of some unknowable sense Kandron knew that it was time for his aide to be at hand to report upon those human affairs. He sent out a signal and another Onlonian scuttled in.

"That unknown human element," Kandron radiated harshly. "I assume that you are not reporting that it has been resolved?"

"Sorry, Supremacy, but your assumption is correct," the creature radiated back, in no very conciliatory fashion. "The trap at Antigan IV was set particularly for him; specifically to match the man whose mentality you computed and diagramed for us. Was it too obvious, think you, Supremacy? Or perhaps not quite obvious enough? Or, the Galaxy being large, is it perhaps that he simply did not learn of it in time? In the next attempt, what degree of obviousness should I employ and what degree of repetition is desirable?"

"The technique of the Antigan affair was flawless," Kandron decided. "He did not learn of it, as you suggest, or we should have caught him. He is a master workman, always concealed by his very obviousness until after he has done his work. Thus we can never, save by merest chance, catch him before the act; we must make him come to us. We must keep on trying until he does come to us. It is of no great moment, really, whether we catch him now or five years hence. This work must be done in any event—it is simply a fortunate coincidence that the necessary destruction of Civilization upon its own planets presents such a fine opportunity of trapping him.

"As to repeating the Antigan technique, we should not repeat it exactly . . . or, hold! It might be best to do just that. To repeat a process is, of course, the mark of an inferior mind; but if that human can be made to believe that our minds are inferior, so much the better. Keep on trying; report as instructed. Remember that he must be taken alive, so that we can take from his living brain the secrets we have not yet been able to learn. Forget, in the instant of leaving this room, everything about me and about any connections between us until I force recollection upon you. Go."

The minion went, and Kandron set out to do more of the things which he could best do. He would have liked to take Nadreck's trail himself; he could catch and he could kill that evasive entity and the task would have been a pleasant one. He would have liked to supervise the trapping of that enigmatic human Lensman who might—or might not—be that frequently and copiously damned Star A Star. That, too, would be an eminently pleasant chore. There were, however, other matters more pressing by far. If

the Great Plan were to succeed, and it absolutely must and would, every Boskonian must perform his assigned duties. Nadreck and his putative accomplice were side issues. Kandron's task was to set up and to direct certain psychoses and disorders; a ghastly train of mental ills of which he possessed such supreme mastery, and which were surely and safely helping to destroy the foundation upon which Galactic Civilization rested. That part was his, and he would do it to the best of his ability. The other things, the personal and nonessential matters, could wait.

Kandron set out then, and traveled fast and far; and wherever he went there spread still further abroad the already widespread blight. A disgusting, a horrible blight with which no human physician or psychiatrist, apparently, could cope; one of, perhaps the worst of, the corrosive blights which had been eating so long at Civilization's vitals.

And L2 Nadreck, having decided to find and slay the ex-ruler of Onlo, went about it in his usual unhurried but eminently thorough fashion. He made no effort to locate him or to trace him personally. That would be bad—foolish. Worse, it would be inefficient. Worst, it would probably be impossible. No, he would find out where Kandron would be at some suitable future time, and wait for him in that place.

To that end Nadreck collected a vast mass of data concerning the occurrences and phenomena which the Big Four had discussed so thoroughly. He analyzed each item, sorting out those which bore the characteristic stamp of the arch-foe whom by now he had come to know so well. The internal evidence of Kandron's craftsmanship was unmistakable; and, not now to his surprise, Nadreck discerned that the number of the Onlonian's dark deeds was legion.

There was the affair of the Prime Minister of DeSilva III, who at a cabinet meeting shot and killed his sovereign and eleven chiefs of state before committing suicide. The President of Viridon, who at his press conference, ran amuck with a scimitar snatched from a wall, hewed unsuspecting reporters to gory bits until he was overpowered, and then swallowed poison.

A variant of the theme, but still plainly Kandron's doing, was the interesting episode in which Galactic Counselor Edmundson, while upon an ocean voyage, threw fifteen women passengers overboard, then leaped after them dressed only in a life jacket stuffed with lead. Another out of the same whimsical mold was that of Dillway, the highly respected Operations Chief of Central Spaceways. That potentate called his secretaries one by one into his sixtieth floor office and unconcernedly tossed them, one by one, out of the window. He danced a jig upon a coping before diving after them to the street.

A particularly juicy and enter-

taining bit, Nadreck thought, was the case of Narkor Base Hospital, in which four of the planet's most eminent surgeons decapitated every other person in the place—patients, nurses, orderlies, and all, with a fine disregard of age, sex, or condition — arranged the several heads, each upright and each facing due north, upon the tiled floor to spell the word "Revenge," and then hacked each other to death with scalpels.

These, and a thousand or more other events of similar technique, Nadreck tabulated and subjected to statistical analysis. Scattered so widely throughout such a vast volume of space, they had created little or no general disturbance; indeed, they had scarcely been noticed by Civilization as a whole. Collected, they made a truly staggering, a revolting and appalling total. Nadreck, however, was inherently incapable of being staggered, revolted, or appalled. That repulsive summation, a thing which in its massed horror would have shaken to the core—shocked almost into paralysis—any being possessing any shred of sympathy or tenderness, was to Nadreck simply an interesting and not too difficult problem in psychology and mathematics.

He placed each episode in space and in time, correlating each with all of its fellows in a space-time matrix. He determined the locus of centers and derived the equations of its most probable motion. He extended it by extrapolation in accordance with that equation. Then, assuring himself that his margin of error was as small as he

could make it, he set out for a planet which Kandron would most probably visit at a time far enough in the future to enable him to receive the Onlonian.

That planet, being inhabited by near-human beings, was warm, brightly sun-lit, and had an atmosphere rich in oxygen. Nadreck detested it, since his ideal of a planet was precisely the opposite. Fortunately, however, he would not have to land upon it until after Kandron's arrival—possibly not then—and the fact that his proposed quarry was, like himself, a frigid-blooded poison-breather, made the task of detection a simple one.

Nadreck set his indetectable speedster into a circular orbit around the planet, far enough out to be comfortable, and sent out course after course of delicate, extremely sensitive screen. Precision of pattern-analysis was, of course, needless. The probability was that all legitimate movement of personnel to and from the planet would be composed of warm-blooded oxygen-breathers; that any visitor not so classified would be Kandron. Any frigid-blooded visitor had at least to be investigated, hence his analytical screens had to be capable only of differentiating between two types of beings as far apart as the galactic poles in practically every respect. Nadreck knew that no supervision would be necessary to perform such an open-and-shut separation as that; he would have nothing more to do until his electronic announcers should warn him of Kandron's approach—or until the passage of time should inform him that the Onlonian was not coming to this particular planet.

Being a mathematician, Nadreck knew that any datum secured by extrapolation is of doubtful value. He thus knew that the actual probability of Kandron's coming was less, by some indeterminable amount, than the mathematical one. Nevertheless, having done all that he could do, he waited with the monstrous, unhuman patience known only to such races as his.

Day by day, week by week, the speedster circled the planet and its big, hot sun; and as it circled, the lone voyager studied. He analyzed more data more precisely; he drew deeper and deeper upon his store of knowledge to determine what steps next to take in the event that this attempt should end, as so many previous ones had ended, in failure.

V.

Kinnison, the author, toiled manfully at his epic of space whenever he was under any sort of observation, and enough at other times to avert any suspicion. Indeed, he worked as much as Sybly Whyte, an advertisedly temperamental writer, had ever worked. Besides interviewing the high and the low, and taking notes everywhere, he attended authors' teas, at which he cursed his characters fluently and bitterly for their

failure to co-operate with him. With short-haired women and long-haired men he bemoaned the perversity of a public which compelled them to prostitute the real genius of which each was the unique possessor. He sympathized particularly with a fat woman writer of whodunits, whose extremely unrealistic yet amazingly popular Gray Lensman hero had lived through ten full-length novels and twenty million copies.

Even though her real field was the drama, she wasn't writing the kind of detective tripe that most of these crank-turners ground out, she confided to Kinnison. She had known lots of Gray Lensmen *very* intimately, and *her* stories were drawn from real life in every particular!

Thus Kinnison remained in character; and thus he was enabled to work completely unnoticed at his real job of finding out what was going on, how the Boskonians were operating to ruin Radelix as they had ruined Antigan IV.

His first care was to investigate the planet's president. That took doing, but he did it. He examined that mind line by line and channel by channel, with no results whatever. No scars, no sign of tampering. Calling in assistance, he searched the president's past even more rigidly than Fossten had searched that of Traska Gannel. Still no soap. Everything checked, even to widely distributed boyhood pictures. Boring from within, then, was out. His first hypothesis was wrong; this invasion and this sabotage were being done from without. How?

Those first leaflets were followed by others, each batch more vitriolic in tone than the preceding one. Apparently they came from empty stratosphere; at least, no ships were to be detected in the neighborhood after any shower of the handbills had appeared. But that was not surprising. With its inertialess drive any spaceship could have been parsecs away before the papers touched atmosphere. Or they could have been bombed in from almost any distance. Or, as Kinnison thought most reasonable, they could have been simply dumped out of the mouth of a hyperspatial tube. In any event the method was immaterial. The results only were important; and those results, the Lensman discovered, were entirely disproportionate to the ostensible causes. The subversive literature had some effect, of course, but essentially it must be a blind. No possible tonnage of anonymous printing could cause that much sheer demoralization.

Crackpot societies of all kinds sprang up everywhere, advocating everything from absolutism to anarchy. Queer cults arose, preaching free love, the imminent end of the world, and almost every other conceivable departure from the norm of thought. The Authors' League, of course, was affected more than any other organization of its size, because of its relatively large content of strong and intensely opinionated minds. In-

stead of becoming one radical group it split into a dozen.

Kinnison joined one of those "Down with Everything!" groups, not as a leader, but as a follower. Not too sheeplike a follower, but just inconspicuous enough to retain his invisibly average status; and from his place of concealment in the middle of the front rank he studied the minds of each of his fellow anarchists. He watched those minds change, he found out who was doing the changing. When Kinnison's turn came he was all set for trouble. He expected to battle a powerful mentality. He would not have been overly surprised to encounter another mad Arisian, hiding behind a zone of hypnotic compulsion. He expected anything, in fact, except what he found—which was a very ordinary Radeligian therapist. The guy was a clever enough operator, of course, but he could not work against even the feeblest opposition. Hence the Gray Lensman had no trouble at all, either in learning everything the fellow knew or, upon leaving him, in implanting within his mind the knowledge that he had made Sybly Whyte into exactly the type of anarchist desired.

The trouble was that the therapist didn't know a thing. This not entirely unexpected development posed Kinnison three questions. Did the higher-ups ever communicate with such small fry, or did they just give them one set of orders and cut them loose? Should he stay in this Radeligian's mind until he found out? If he was in control of the therapist when a big shot took over, did he have jets enough to keep from being found out? Risky business; better scout around first, anyway. He'd do a flit.

He drove his black speedster a million miles. He covered Radelix like a blanket, around the equator and from pole to pole. Everywhere he found the same state of things. The planet was literally riddled with the agitators; he found so many that he was forced to a black conclusion. There could be no connection or communication between such numbers of saboteurs and any higher authority. They must have been sent with one set of do-or-die instructions—whether they did or died was immaterial. Experimentally, Kinnison had a few of the ringleaders taken into custody. As each was arrested another took his place.

Martial law was finally declared, but this measure succeeded only in driving the conspirators underground. What the subversive societies lost in numbers they more than made up in desperation and violence. Crime raged unchecked and uncheckable, murder became an every-day commonplace, insanity waxed rife. And Kinnison, knowing now that no channel to important prey would be opened until the climax, watched grimly while the rape of the planet went on.

The president of Radelix and Lensman Gerrond sent message

after message to Prime Base and to Klovia, imploring help. The replies to these pleas were all alike. The matter had been referred to the Galactic Council and to the Co-ordinator. Everything that could be done was being done. Neither office would say anything else, except that, with the galaxy in such a disturbed condition, each planet must do its best to solve its own problems.

The thing built up toward its atrocious finale. Gerrond invited the president to a conference in a downtown hotel room, and there, eyes glancing from moment to moment at the dials of a complete little test-kit held open upon his lap:

"I have just had some startling news, sir," Gerrond said, abruptly. "Kinnison has been here on Radelix for weeks."

"What? Kinnison? Where is he? Why didn't he—?"

"Yes, Kinnison. Kinnison of Klovia. The Co-ordinator himself. I don't know where he is, or was. I didn't ask him." The Lensman smiled fleetingly. "One doesn't, you know. He discussed the situation with me at length. I am still amazed—"

"Why doesn't he stop it, then?" the president demanded. "Or can't he stop it?"

"That's what I've got to explain to you. He can, but the time won't be ripe until the last act."

"Why not? I tell you, if this thing can be stopped it's *got* to be stopped, and no matter what has to be done it's *got* to be—"

"Just a minute!" Gerrond snapped. "I know that you're out of control—I don't like to see Radelix torn apart any better than you do—but you ought to know by this time that Galactic Co-ordinator Kimball Kinnison is in a better position to know what to do than any other man in the universe. Furthermore, his word is the last word. What he says, goes."

"Of course," the president apologized. "I am overwrought . . . but to see our entire world pulled down around us and upon us, our institutions, the work of centuries, destroyed, millions of lives lost . . . all needlessly—"

"It won't come to that, he says, if we all do our parts. And you, sir, are very much in the picture."

"I? How?"

"Are you familiar with exactly what happened upon Antigan IV?"

"Why, no. They had some trouble over there, I recall, but—"

"That's it. That's why this must go on. No planet cares particularly about what happens to any other planet, but the Co-ordinator cares about them all, as a whole. If this trouble is headed off now, it will simply spread to other planets; if it is allowed to come to a climax there is a good chance that we can put an end to the whole trouble, for good."

"But what has that to do with me? What can I, personally, do?"

"Much. The last act upon Antigan IV, the thing that made it a planet of maniacs, was the kidnaping of Planetary President Renwood. It is supposed that he was

murdered, since no trace of him has ever been found."

"Oh." The older man's hands clenched, then loosened. "I am willing . . . provided— Is the Co-ordinator fairly certain that my death will enable him—"

"It won't get that far, sir. He intends to stop it just before that. He and his associates—I don't know who they are—have been listing every enemy agent they can find, and they will all be taken care of at once. He believes that Boskone will publish in advance a definite time at which they will take you away from us. That was the way it went at Antigan."

"Even from the Patrol?"

"From Base itself. Co-ordinator Kinnison is pretty sure that they can do it, except for something that he can bring into play only at the last moment. Incidentally, that is why we are having this meeting here, with this detector which he gave me. He is afraid that Base is porous."

"In that case . . . what can he—" The president fell silent.

"All that I know is that we are to dress you in a certain suit of armor and have you in my private office in Base a few minutes before the time they set. We and the guards leave the office at minus two minutes and walk down the corridor, just fast enough so that at minus one minute we are exactly in front of Room Twenty-four. We are to rehearse it until our timing is perfect. I have no idea what is going to happen then, but I know that something will. We are not to discuss this again, even via Lens, as he is pretty sure that you will very shortly be under surveillance every minute."

Time passed; the Boskonian infiltration progressed strictly according to plan. Upon the surface it appeared that Radelix was going in almost the same fashion in which Antigan IV had gone. Below the surface, however, there was one great difference. Every ship, whether liner or freighter or tramp, which docked at any spaceport of Radelix, brought at least one man who did not leave. Some of these visitors were tall and lithe, some were short and fat. Some were old, some were young. Some were pale, some were burned to the complexion of ancient leather by the fervent rays of space. They were alike only in the "look of eagles" in their steady, quiet eyes. Each landed and went about his ostensible business, interesting himself not at all in any of the others.

Again the Boskonians declared their contempt of the Patrol by setting the exact time at which the president was to be taken. Again the appointed hour was midnight.

Vice Admiral Lensman Gerrond was, as Kinnison had intimated frequently, somewhat of a brass hat. He did not, he simply could not believe that his Base was as pregnable as the Co-ordinator had assumed it to be. Kinnison, knowing that all ordinary defenses would be useless, had not even mentioned them. Gerrond, unable

to believe that his hitherto invincible and invulnerable weapons and defenses were all of a sudden useless, mustered them of his own volition.

All leaves had been canceled. Every detector, every beam, every device of defense and of offense was fully manned. Every man was keyed up and alert. And Gerrond, while the least bit apprehensive that something was about to happen which was not in the book, was pretty sure in his stout old war-dog's soul that he and his men had stuff enough.

At two minutes before midnight the armored president and his escorts left Gerrond's private office. One minute later they were passing the door of the specified room. A bomb exploded shatteringly behind them, armored men rushed yelling out of a branch corridor in their rear. Everybody stopped and turned to look. So, the hidden Kinnison assured himself, did an unseen observer in an invisibly hovering, three-dimensional hypercircle.

Kinnison threw the door open, flashed an explanatory thought at the president, yanked him into the room and into the midst of a corps of Lensmen armed with devices not usually encountered even in Patrol bases. The door snapped shut and Kinnison stood where the president had stood an instant before, clad in armor identical with that which the president had worn. The exchange had required less than one second: it had been observed by no one.

"QX, Gerrond and you fellows!" Kinnison drove the thought. "The president is safe —I'm taking over. Double time straight ahead—hipe! Get into the clear—give us a chance to use our stuff!"

The unarmored men broke into a run, and as they did so the door of Room Twenty-four swung open and stayed open. Weapons snouted out, shoved by armored men. Armored men and heavy weapons erupted from other doors and from more branch corridors. The hypercircle, which was, in fact, the terminus of a hyperspatial tube, began to thicken toward visibility.

It did not, however, materialize. Only by the intensest effort of vision could it be discerned as the sheerest wisp, more tenuous than the thinnest fog. The men within the ship, if ship it was, were visible only as striations in air are visible, and no more to be made out in detail. Instead of a full materialization, the only thing that was or became solid or tangible was a dead-black thing which reached purposefully outward and downward toward Kinnison, a thing combined of tongs and coarse-meshed, heavy net.

Kinnison's DeLameters flamed at maximum intensity and minimum aperture. Useless. The stuff was dureum; that unbelievably dense and ultimately refractory synthetic which, saturated with pure force, is the only known substance which can exist as an actuality both in normal space and in that pseudo-space which composes the hyper-

spatial tube. The Lensman flicked on his neutralizer and shot away inertialess; but that maneuver, too, had been foreseen. The Boskonian engineers matched every move he made, within a split second after he made it; the tong-net gripped and closed.

Semiportables flamed then—heavy stuff—but they might just as well have remained cold. Their beams could not cut the dureum linkages; they slid harmlessly *past* —not through—the wraithlike, figmental invaders at whom they were timed. Kinnison was hauled aboard the Boskonian vessel; its structure and its furnishings and its crew becoming ever firmer and more substantial to his senses as he went from normal into pseudo-space.

As the pseudoworld became real, the reality of the base behind him thinned into unreality. In seconds it disappeared utterly, and Kinnison knew that to the senses of his fellow human beings he had vanished without leaving a trace. This ship, though, was real enough. So were his captors.

The net opened, dumping the Lensman ignominiously to the floor. Tractor beams wrenched his blazing DeLameters out of his grasp—whether or not hands and arms came with them was entirely his own lookout. Tractors and pressors jerked him upright, slammed him against the steel wall of the room, held him motionless against it.

Furiously he launched his ultimately lethal weapon, the Worsel-designed, Thorndyke-built, mind-controlled projector of thought-borne vibrations which decomposed the molecules without which thought and life itself could not exist. Nothing happened. He explored, finding that even his sense of perception was stopped a full foot away from every part of every one of those humanoid bodies. He settled down then and thought. A great light dawned; a shock struck sickeningly home.

No such elaborate and super-powered preparations would have been made for the capture of any civilian. Presidents were old men, physically weak and with no extraordinary powers of mind. No—this whole chain of events had been according to plan—a high Boskonian's plan. Ruining a planet was, of course, a highly desirable feature in itself, but it could not have been the main feature.

Somebody with a real brain was out after the four Second-Stage Lensmen, and he wasn't fooling. And if Nadreck, Worsel, Tregonsee and himself were all to disappear, the Patrol would know that it had been nudged. But jet back—which of the four other than himself would have taken that particular bait? Not one of them. Weren't they out after them, too? Sure they were—they must be. Oh, if he could only warn them—but after all, what good would it do? They had all warned each other repeatedly to watch out for traps; all four had been constantly on guard. What possible foresight could have avoided a snare set so

perfectly to match every detail of a man's physical and mental make-up?

But he wasn't licked yet. They had to know what he knew, how he had done what he had done, whether or not he had any superiors and who they were. Therefore they had had to take him alive, just as he had had to take various Boskonian chiefs. And they'd find out that as long as he was alive he'd be a dangerous buzzsaw to monkey with.

The captain, or whoever was in charge, would send for him; that was a foregone conclusion. He would have to find out what it was that he had caught; he would have to make a preliminary report of some kind. And somebody would slip. One hundred percent vigilance was impossible, and Kinnison would be on his toes to take advantage of that slip, whatever or however slight it might be.

But the captors did not take Kinnison to the captain. Instead, accompanied by half a dozen armored men, that worthy came to Kinnison.

"Start talking, fellow, and talk fast," the Boskonian directed crisply in the lingua franca of deep space as the armored soldiers strode out. "I want to know who you are, what you are, what you've done, and everything about you and the Patrol. So talk—or do you want me to pull you apart with these tractors, armor and all?"

Kinnison paid no attention, but drove at the commander with his every mental force and weapon. Blocked. This ape too had a full-body, full-coverage screen.

There was a switch, at the captain's hip, handy for finger-tip control. If he could only move! It would be *so* easy to flip that switch! Or if he could throw something, or make one of those other fellows brush against him just right, or if the guy happened to sit down a little too close to the arm of a chair, or if there were a pet animal of any kind around, or a spider or a worm or even a gnat—

VI.

Second-Stage Lensman Tregonsee of Rigel IV did not rush madly out into space in quest of something or anything Boskonian in response to Kinnison's call. To hurry was not Tregonsee's way. He could move fast upon occasion, but before he would move at all he had to know exactly how, where, and why he should move.

He conferred with his three fellows, he furnished them with all the data he possessed, he helped integrate the totaled facts into one composite. That composite pleased the others well enough so that they went to work, each in his own fashion, but it did not please Tregonsee. He could not visualize any coherent whole from the available parts. Therefore, while Kinnison was investigating the fall of Antigan IV, Tregonsee was sittting —or rather, standing—still and thinking. He was still standing still and thinking when Kinnison went to Radelix.

Finally he called in an assistant to help him think. He had more respect for the opinions of Camilla Kinnison than for those of any other entity, outside of Arisia, of the two galaxies. He had helped train all five of the Kinnison children, and in Cam he had found a kindred soul. Possessing a truer sense of values than any of his fellows, he alone realized that the pupils had long since passed their tutors; and it is a measure of his quality that the realization brought into Tregonsee's tranquil soul no tinge of rancor, but only wonder. What those incredible Children of the Lens had he did not know, but he knew that they—particularly Camilla—had extraordinary gifts.

In the mind of this scarcely grown woman he perceived depths which he could not plumb, extensions and vistas the meanings of which he could not even vaguely grasp. He did not try either to plumb the abysses or to survey the expanses; he made no slightest effort, ever, to take from any of the children anything which the child did not first offer to reveal. In his own mind he tried to classify theirs; but, realizing in the end that that task was and always would be beyond his power, he accepted that fact as calmly as he accepted the numberless others of Nature's inexplicable facts. Tregonsee came the closest of any Second-Stage Lensman to the real truth, but even he never did suspect the existence of the Eddorians.

Camilla, as quiet as her twin sister Constance was boisterous, parked her speedster in one of the capacious holds of the Rigellian's spaceship and joined him in the control room.

"You believe, I take it, that Dad's logic is faulty, his deductions erroneous?" the girl thought; after a casual greeting. "I'm not surprised. So do I. He jumped at conclusions. But then, he does that, you know."

"Oh, I wouldn't say that, exactly. However, it seems to me," Tregonsee replied carefully, "that he did not have sufficient basis in fact to form any definite conclusion as to whether or not Renwood of Antigan was a Boskonian operative. It is that point which I wish to discuss with you first."

Cam concentrated. "I don't see that it makes any difference, fundamentally, whether he was or not," she decided, finally. "A difference in method only, not in motivation. Interesting, perhaps, but immaterial. It is virtually certain in either case that Kandron of Onlo or some other entity is the motive force and is the one who must be destroyed."

"Of course, my dear, but that is only the first differential. How about the second, and the third? Method governs. Nadreck, concerning himself only with Kandron, tabulated and studied only the Kandronesque manifestations. He may — probably will — eliminate Kandron. It is by no means assured, however, that that step will be enough. In fact, from my preliminary study, I would risk a small wager that the larger and

worse aspects would remain untouched. I would, therefore, suggest that we ignore, for the time being, Nadreck's findings and examine anew all the data available."

"I wouldn't bet you a millo on that." Camilla caught her lower lip between white, even teeth. "Check. The probability is that Renwood was a loyal citizen. Let us consider every possible argument for and against that assumption—"

They went into a contact of minds so close that the separate thoughts simply could not be resolved into terms of speech. They remained that way, not for the period of a few minutes which would have exhausted any ordinary brain, but for four solid hours; and at the end of that conference they had arrived at a few tentative conclusions.

Kinnison had said that there was no possibility of tracing a hyperspatial tube after it had ceased to exist. There were millions of planets in the two galaxies. There was an indefinite, quite possibly an infinite number of coexistent parallel spaces, into any one of which the tube might have led. Knowing these things, Kinnison had decided that the probability was infinitesimally small that any successful investigation could be made along those lines.

Tregonsee and Camilla, starting with the same facts, arrived at entirely different results. There were many spaces, true, but the inhabitants of any one space belonged to that space and would not be interested in the conquest or the permanent taking over of any other. Foreign spaces, then, need not be considered. Civilization had only one significant enemy: Boskonia. Boskonia, then, captained possibly by Kandron of Onlo, was the attacker. The tube itself could not be traced and there were millions of planets, yes, but those facts were not pertinent.

Why not? Because "X," who might or might not be Kandron, was not operating from a fixed headquarters, receiving reports from subordinates who did the work. A rigid philosophical analysis, of which few other minds would have been capable, showed that "X" was doing the work himself, and was moving from solar system to solar system to do it. Those mass psychoses in which entire garrisons went mad all at once, those mass hysterias in which vast groups of civilians went reasonably out of control, could not have been brought about by any ordinary mind. Of all Civilization, only Nadreck of Palain VII had the requisite ability; was it reasonable to suppose that Boskonia had many such minds? No. "X" was either singular or a small integer.

Which? Could they decide the point? With some additional data, they could. Their linked minds went *en rapport* with Worsel, with Nadreck, with Kinnison, and with the principal statistician at Prime Base.

In addition to Nadreck's locus, they determined two more—one of all inimical manifestations, the other of those which Nadreck had not used in his computations. Their final exhaustive analysis showed that there were at least two, and very probably only two, prime intelligences directing those Boskonian activities. They made no attempt to identify either of them. They communicated to Nadreck their results and their conclusions.

"I am working on Kandron," the Palainian replied, flatly. "I made no assumptions as to whether or not there were other prime movers at work, since the point has no bearing. Your information is very interesting, and may perhaps prove valuable, and I thank you for it—but my present assignment is to find and to kill Kandron of Onlo."

Tregonsee and Camilla, then, set out to find "X"; not any definite actual or deduced entity, but the perpetrator of certain closely related and highly characteristic phenomena, viz., mass psychoses and mass hysterias. Nor did they extrapolate. They visited the last few planets which had been affected, in the order in which the attacks had occurred. They studied every phase of every situation. They worked slowly, but—they hoped and they believed—surely. Neither of them had any idea then that behind "X" lay Ploor, and beyond Ploor, Eddore.

Having examined the planet latest to be stricken, they made no effort to pick out definitely the one next to be attacked. It might be any one of ten worlds, or possibly even twelve. Hence, neglecting entirely the mathematical and logical probabilities involved, they watched them all, each taking six. Each flitted from world to world, with senses alert to perceive the first sign of subversive activity. Tregonsee was a retired magnate, spending his declining years in seeing the galaxy; Camilla was a Tellurian business girl on vacation.

Young, b e a u t i f u l, innocent-looking girls who traveled alone were, then as ever, regarded as fair game by the Don Juan of any given human world. Scarcely had Camilla registered at the Hotel Grande when a well-groomed, self-satisfied man-about-town made an approach.

"Hel-lo, Beautiful! Remember me, don't you—old Tom Thomas? What say we split a bottle of fayalin, to renew old—" He broke off, for the red-headed eyeful's reaction was in no sense orthodox. She was not coldly unaware of his presence. She was neither coy nor angry, neither fearful nor scornful. She was only and vastly *amused*.

"You think, then, that I am human and desirable?" Her smile was devastating. "Did you ever hear of the Canthrips of Ollenole?" She had never heard of them either, before that instant, but this small implied mendacity did not bother her.

"No, I can't say that I have." The man, while very evidently taken aback by this new line of resistance, persevered. "What kind of a brush-off do you think you're trying to give me?"

"Brush-off? See me as I am, you beast, and thank whatever gods you recognize that I am not hungry, having eaten just last night." In his sight her green eyes darkened to a jetty black, the flecks of gold in them scintillated and began to emit sparks. Her hair turned into a mass of horribly clutching tentacles. Her teeth became fangs, her fingers talons, her strong, splendidly proportioned body a monstrosity out of Hell's grisliest depths.

After a moment she allowed the frightful picture to fade back into her charming self, keeping the Romeo from fainting by the power of her will.

"Call the manager if you like. He has been watching and has seen nothing except that you are pale and sweating. I, a friend of yours, have been giving you some bad news, perhaps. Tell your stupid police all about me, if you wish to

spend the rest of your life in a padded cell. I'll see you again in a day or two, I hope. I'll be hungry again by that time." She walked away, serenely confident that the fellow would never willingly come within sight of her again.

She had not damaged his ego permanently—he was not a neurotic type—but she had given him a jolt which he never would forget. Camilla Kinnison nor any of her sisters had anything to fear from any male or males infesting any planet or roaming any depths of space.

The expected and awaited trouble developed. Tregonsee and Camilla landed and began their hunt. The League for Planetary Purity, it appeared, was the primary focal point; hence the two attended a meeting of that crusading body. That was a mistake; Tregonsee should have stayed out in deep space, concealed behind a solid thought-screen.

For Camilla was an unknown. Furthermore, her mind was inherently stable at the third level of stress; no lesser mind could penetrate her screens or, having failed to do so, could recognize the fact of failure. Tregonsee, however, was known throughout all civilized space. He was not wearing his Lens, of course, but his very shape made him suspect. Worse, he could not hide from any mind as powerful as that of "X" the fact that his mind was very decidedly not that of a retired Rigellian gentleman.

Thus Camilla had known that the procedure was a mistake. She intimated as much, but she could not sway the unswerving Tregonsee from his determined course without revealing things which must forever remain hidden from him. She acquiesced, therefore, but she knew what to expect.

Hence, when the invading intelligence blanketed the assemblage lightly, only to be withdrawn instantly upon detecting the emanations of a mind of real power, Cam had a bare moment of time in which to act. She synchronized with the intruding thought, began to analyze it and to trace it back to its source. She did not have time enough to succeed fully in either endeavor, but she did get a line. When the foreign influence vanished she shot a message to Tregonsee and they sped away.

Hurtling through space along the established line, Tregonsee's mind was a turmoil of thought; thoughts as plain as print to Camilla. She flushed uncomfortably—she could, of course, blush at will.

"I'm not half the superman whose picture you are painting," she said. That was true enough; no one this side of Arisia could have been. "You're so famous, you know, and I'm not—while he was examining you I had a fraction of a second to work in. You didn't."

"That may be true." Although Tregonsee had no eyes, the girl knew that he was staring at her;

scanning, but not intruding, with his highly developed sense of perception. She lowered her barriers so far that he thought they were completely down. "You have, however, extraordinary and completely inexplicable powers . . . but, being the daughter of Kimball and Clarrissa Kinnison—"

"That's it, I think." She paused, then, in a burst of girlish confidence, went on: "I've got something, I really do think, but the trouble is that I don't know what it is or what to do with it. Maybe in fifty years or so I will."

This also was close enough to the truth, and it did serve to restore to Tregonsee his wonted poise. "Be that as it may, I will take your advice next time, if you will offer it."

"Try and stop me—I love to give advice." She laughed unaffectedly. "It might not have turned out any differently this time, though, and it may not be any better next time."

Then, further to quiet the shrewd Rigellian's suspicions, she strode over to the control panel and checked the course. Having done so, she fanned out detectors, centering upon that course, to the fullest range of their power. She swaggered a little when she speared with the CRX tracer a distant vessel in a highly satisfactory location. That act would cut her down to size in Tregonsee's mind.

"You think, then, that 'X' is in that ship?" he asked, quietly.

"Probably not." She could not afford to act too dumb—she could fool a Second-Stage Lensman a little, but nobody could fool one very much. "It may, however, give us a lead."

"It is practically certain that 'X' is not in that vessel," Tregonsee thought. "In fact, it may be a trap. We must, however, make the customary arrangements to take it into custody."

Cam nodded and the Rigellian communications officers energized their long-range beams. Far ahead of the fleeing vessel, centering upon its line of flight, fast cruisers of the Galactic Patrol began to form a gigantic cup. Hours passed, and—a not unexpected circumstance — Tregonsee's superdreadnought gained rapidly upon the supposed Boskonian.

The quarry did not swerve or dodge. Straight into the mouth of the cup it sped. Tractors and pressors reached out, locked on, and were neither repulsed nor cut. The strange ship did not go inert, did not put out a single course of screen, did not fire a beam. She did not reply to signals. Spy rays combed her from needle nose to driving jets, searching every compartment. There was no sign of life aboard.

Spots of pink appeared upon Camilla's deliciously smooth cheeks, her eyes flashed. "We've been had, Uncle Trig—*how* we've been had!" she exclaimed, and her chagrin was not all assumed. She had not quite anticipated such a complete fiasco as this.

"Score one for 'X,'" Tregonsee said. He not only seemed to be, but actually was, calm and unmoved. "We will now go back and pick up where we left off."

They did not discuss the thing at all, nor did they wonder how "X" had escaped them. After the fact, they both knew. There had been at least two vessels; at least one of them had been inherently indetectable and screened against thought. In one of these latter "X" had taken a course at some indeterminable angle to the one which they had followed.

"X" was now at a safe distance.

"X" was nobody's fool.

VII.

Kathryn Kinnison, trim and taut in black glamourette, strolled into the breakfast nook humming a lilting song. Pausing before a full-length mirror, she adjusted her cocky little black toque at an even more piquant angle over her left eye. She made a couple of passes at her riot of curls and gazed at her reflected self in high approval as, putting both hands upon her smoothly rounded hips, she—"wriggled" is the only possible term for it—in the sheer joy of being alive.

"Kathryn—" Clarrissa Kinnison chided gently, "don't be exhibitionistic, dear." Except in times of stress the Kinnison women used spoken language, "to keep in practice," as they said.

"Why not? It's fun." The tall girl bent over and kissed her mother upon the lobe of an ear. "You're sweet, Mums, you know that? You're the most *precious* thing—Ha! Bacon and eggs? Goody!"

The older woman watched half-enviously as her eldest daughter ate with the carefree abandon of one who has no cares whatever either for her digestion or for her figure. She had no more understood her children, ever, than a hen can understand the brood of ducklings she has so unwittingly hatched out, and that comparison was more strikingly apt than Clarrissa Kinnison ever would know. She now knew, more than a little ruefully, that she never would understand them.

She had not protested openly at the rigor of the regime to which her son Christopher had been subjected from birth. That, she knew, was necessary. It was inconceivable that Kit should not be a Lensman, and for a man to become a Lensman he had to be given everything which he could possibly take. She was deeply glad, however, that her four other babies had been girls. Her daughters were *not* going to be Lensmen. She, who had known so long and so heavily the weight of Lensman's load, would see to that. Herself a womanly, feminine woman, she had fought with every resource at her command to make her girl babies grow up into replicas of herself. She had failed.

They simply would not play with dolls, nor play house with other little girls. Instead, they insisted upon "intruding," as she

considered it, upon Lensmen; preferably upon Second-Stage Lensmen, if any one of the four chanced to be anywhere within reach. Instead of with toys, they played with atomic engines and flitters; and, later, with speedsters and spaceships. Instead of primers, they read Galactic charts. One of them might be at home, as now, or all of them; or none. She never did know what to expect.

But they were in no sense disloyal. They loved their mother with a depth of affection which no other mother, anywhere, has ever known. They tried their very best to keep her from worrying about them. They kept in touch with her wherever they went—which might be at whim to Tellus or to Trale or to Alsakan or to any unplumbed cranny of intergalactic space—and they informed her, apparently without reservation, as to everything they did. They loved their father and their brother and each other and themselves with the same whole-hearted fervor they bestowed upon her. They behaved always in exemplary fashion. None of them had ever shown or felt the slightest interest in any one of numerous boys and men; and this trait, if the truth is to be told, Clarrissa could understand least of all.

No. The only thing basically wrong with them was the fact, made abundantly clear since they first toddled, that they should not be and could not be subjected to any jot or tittle of any form of control, however applied.

Kathryn finished eating finally and gave her mother a bright, quick grin. "Sorry, Mums, you'll just have to give us up as hard cases, I guess." Her fine eyes, so like Clarrissa's except in color, clouded as she went on: "I *am* sorry, Mother, really, that we can't be what you so want us to be. We've tried so hard, but we just can't. It's something here, and here—" She tapped one temple and prodded her midsection with a pink forefinger. "Call it fatalism or anything you please, but I think that we're slated to do a job of some kind, some day, even though none of us has any idea what that job is going to be."

Clarrissa paled. "I have been thinking just that for years, dear . . . I have been afraid to say it, or even to think it. You are Kim's children, and mine. If there ever was a perfect, a predestined marriage, it is ours. And Mentor said that our marriage was necessary—" She paused, and in that instant she almost perceived the truth. She was closer to it than she had ever been before or ever would be again. But that truth was far too vast for her mind to grasp. She went on: "But I'd do it over again, Kathryn, knowing everything I know now. 'Vast rewards,' you know—"

"Of course you would," Kat interrupted. "Any girl would be a fool not to. The minute I meet a man like Dad I'm going to marry him, if I have to scratch Kay's eyes out and snatch Cam and Con bald-headed to get him. But

speaking of Dad, just what do you think of l'affaire Radelix?"

Gone every trace of levity, both women stood up. Gold-flecked tawny eyes stared deeply into gold-flecked eyes of dark and velvety green.

"I don't know." Clarrissa spoke slowly, meaningfully. "Do you?"

"No. I wish that I did." Kathryn's was not the voice of a girl, but that of an avenging angel. "As Kit says, I'd give four front teeth and my right leg to the knee joint to know who or what is back of that, but I don't. I feel very much in the mood to do a flit out that way."

"Do you?" Clarrissa paused. "I'm glad. I'd go myself, in spite of everything he says, except that I know I couldn't do anything. If that should be the job you were talking about— Oh, do anything you can, dear; *anything* to make sure that he comes back to me!"

"Of course, Mums." Kathryn broke away almost by force from her mother's emotion. "I don't think it is; at least, I haven't got any cosmic hunch to that effect. And don't worry; it puts wrinkles in the girlish complexion. I'll do just a little look-see, stick around long enough to find out what's what, and let you know all about it. 'Bye."

At high velocity Kathryn drove her indetectable speedster to Radelix, and around and upon that planet she conducted invisible investigations. She learned a part of the true state of affairs, she deduced more of it, but she could not see, even dimly, the picture as a whole. This part, though, was clear enough.

An interdimensional expert, she did not have to be at the one apparent mouth of a hyperspatial tube in order to enter it; she knew that while communication was impossible either through such a tube from space to space or from the interior of the tube to either space, the quality of the tube was not the barrier. The interface was. Wherefore, knowing what to expect immediately and working diligently to solve the whole problem, she waited.

She watched Kinnison's abduction. There was nothing she could do about that. She could not interfere then without setting up repercussions which might very well shatter the entire structure of the Galactic Patrol. When the Boskonian ship had disappeared, however, she tapped the tube and followed it. Almost nose to tail she pressed it, tensely alert to do some helpful deed which could be ascribed to accident or to luck. For she knew starkly that Kinnison's present captors would not slip and that his every ability had been discounted in advance.

Thus she was ready, when Kinnison's attention concentrated upon the switch controlling the Boskonian captain's thought-screen generator. There were no pets or spiders or worms, or even gnats, but the captain could sit down. Around his screen, then, she drove a solid beam of thought, upon a

channel which neither the pirate nor the Lensman knew existed. She took over in a trice the fellow's entire mind. He sat down, as Kinnison had so earnestly hoped that he would do, the merest fraction of an inch too close to the chair's arm. The switch-handle flipped over and Kathryn snatched her mind away. She was sure that her father would not suspect that that bit of luck was anything except purely fortuitous. She was equally sure that the thing was safe, for a time at least, in Kinnison's highly capable hands. She slowed down, allowed the distance between the two vessels to increase. But she kept within range, for it was more than probable that one or two more seemingly lucky accidents would have to happen before very long.

In the instant of the flicking of the switch the captain's mind became Kinnison's. He was going to issue orders, to take the ship over in an orderly way, but his first contact with the subjugated mind made him change his plans. Instead of uttering orders, the captain leaped out of the chair toward the beam-controllers.

And not an instant too soon. Others had seen what had happened, had heard that telltale click. All had been warned against that and many other contingencies. As the captain leaped, one of his fellows drew a bullet-projector and calmly shot him through the head.

The shock of that bullet, the death of the mind in his own mind's grasp, jarred the Gray Lensman to the core. It was almost the same as though he himself had been killed. Nevertheless, by sheer force of will he held on, by sheer power of will he made that dead body take those last three steps and forced those dead hands to cut the master circuit of the beams which were holding him helpless.

Freed, he leaped forward; but not alone. The others leaped, too, and for the same switch. Kinnison got there first—just barely first—and as he came he swung his armored fist.

What a dureum-inlaid glove, driven by all the brawn of Kimball Kinnison's mighty right arm and powerful torso backed by all the momentum of body- and armor-mass, will do to a human head met in direct central impact is nothing to dwell upon here. Simply, that head splashed. Pivoting nimbly, considering his encumbering armor, he swung a terrific leg. His massive steel boot sank calf-deep into the abdomen of the foe next in line. Two more utterly irresistible blows disposed of two more of the Boskonians; the last two turned and, frantically, ran. But the Lensman by that time had the juice back on; and when a man has been smacked against a solid armor-plate bulkhead by the full power of a D2P pressor, all that remains to be done must be accomplished with a scraper and a mop—or a sponge.

Kinnison picked up his DeLameters, reconnected them, and took stock. So far, so good. But there were other men aboard this heap—

how many, he'd better find out—and at least some of them wore dureum-inlaid armor as capable as his own.

And in her speedster, concluding that this wasn't going to be so bad, after all, Kathryn glowed with pride in her father's prowess. She was no shrinking violet, this Third-Stage Lensman; she held no ruth whatever for Civilization's foes. She herself would have driven that beam as mercilessly as had the Gray Lensman. She could have told Kinnison what next to do; could even have inserted the knowledge stealthily into his mind; but, heroically, she refrained. She would let him handle this in his own fashion as long as he possibly could do so.

The Gray Lensman sent his sense of perception abroad. Twenty more of them—the ship wasn't very big. Ten aft, armored. Six forward, also armored. Four, unarmored, in the control room. That control room was poison; he'd go aft first. He searched around—surely they'd have dureum space-axes? Oh, yes, there they were. He hefted them, selected one of the correct weight and balance. He strode down the companionway to the wardroom. He flung the door open and stepped inside.

His first care was to blast the communicator panels with his De-Lameters. That would delay the mustering of reinforcements. The control room couldn't guess, at least for a time, that one man was setting out to capture their ship single-handed. His second, ignoring the beams of hand-weapons splashing refulgently from his screens, was to weld the steel door solidly to the jamb. Then, sheathing his projectors, he swung up his ax and went grimly to work. He thought fleetingly of how nice it would be to have VanBuskirk, that dean of all ax-men, at his back; but he wasn't too old or too fat to swing a pretty mean ax himself. And, fortunately, these Boskonians, here in their quarters, didn't have axes. They were heavy, clumsy, and for emergency use only; they were not a part of the regular uniform, as upon Valeria.

The space-ax! Formerly that weapon had been forged from the hardest and toughest of alloy steels. For years, however, it had been made universally from dureum. A deceptive little thing, truly! A dainty-looking affair a little larger than a broad-hatchet. Unlike a hatchet, however, it had a mass of some twenty pounds and was equipped with a yard-long, double-gripped shaft. A sharply tapered spear-end for thrusting, gouging, and stabbing; a wickedly curved, needle-pointed beak for rending and tearing; a flatly rounded, razor-sharp blade capable of shearing through neo-carballoy as cleanly as a scalpel through butter.

The first foe swung up his De-Lameter involuntarily as Kinnison's ax swept down. When the curved blade, driven as viciously as the Lensman's strength could drive it, struck the ray-gun it did not even pause. Through it it sliced, the severed halves falling to the floor.

The dureum inlay of the glove held, and glove and ax smashed together against the helmet. The Boskonian went down with a crash; but, beyond a broken arm or some such trifle, he wasn't hurt much. And no armor that a man had to carry around could be made of solid dureum. Hence, Kinnison reversed his weapon and swung again, aiming carefully at a point between the inlay strips. The ax's wicked beak tore through steel and skull and brain, stopping only with the sharply ringing impact of dureum shaft against dureum stripping.

They were coming at him now, not only with DeLameters, but with whatever of steel bars and spanners and bludgeons they could find. QX—his armor could take oodles of that. They might dent it, but they couldn't possibly get through. Planting one boot solidly upon his victim's helmet, he wrenched his ax out through flesh and bone and metal—no fear of breakage; not even a Valerian's full savage strength could break that small, fragile-looking tool—and struck again. And struck—and struck.

He fought his way to the door—two of the survivors were trying to unseal it and to get away. They failed; and, in failing, died. A couple of the remaining enemies shrieked and ran in blind panic, and tried to hide; the others battled desperately on. But whether they ran or fought there was only one possible end, if the Patrolman were to survive. No enemy must or could be left alive behind him, to bring to bear upon his back some semiportable weapon with whose energies his armor's screens could not cope.

When the grisly business was over Kinnison, panting, rested briefly. This was the first real brawl he had been in for twenty years; and for a veteran—a white-collar man, a Co-ordinator to boot—he hadn't done so bad, he thought. That was hard work and, while he was maybe a hair short on wind, he hadn't weakened a particle. To here, QX.

And lovely Kathryn, far enough back but not too far and reading imperceptibly his every thought, agreed with him enthusiastically. She did not have a father complex, but in common with her sisters she knew exactly what her father was. With equal exactitude she knew what other men were. Knowing them, and knowing however imperfectly herself, each of the Kinnison girls knew that it would be a physical and psychological impossibility for her to become even mildly interested in any man not at least her father's equal. They each had dreamed of a man who would be her own equal, physically and mentally, but it had not yet occurred to any of them that one such man already existed.

Kinnison cut the door away and again sent out his sense of perception. With it fanning out ahead of him he retraced his previous path. The apes in the control room had done something; he didn't know just what. Two of them were tinkering with a communicator panel; probably the one to the ward room. They

probably thought that the trouble was at their end. Or did they? Why hadn't they reconnoitered? He dismissed that problem as being of no pressing importance. The other two were doing something at another panel. What? He couldn't make head or tail of it—hang those full-coverage screens! And Nadreck's fancy drill, even if he had had one along, wouldn't work unless the screen were absolutely steady. Well, it didn't make much, if any, difference. They had called the men back from up forward, and here they came. He'd rather meet them in the corridor than in an open room, anyway, he could handle them a lot easier.

But tensely watching Kathryn gnawed her lip. Should she tell him, or control him, or not? No. She wouldn't—she couldn't—yet. Dad could figure out that pilot room trap without her help—and she herself, with all her power of brain, could not visualize with any degree of clarity the menace which was—which *must* be—at the tube's end or even now rushing along it to meet that Boskonian ship.

Kinnison met the oncoming six and vanquished them. By no means as easily as he had conquered the others, since they had been warned and since they also now bore space-axes, but just as finally. Kinnison did not consider it remarkable that he escaped practically unscathed—his armor was battered and dinged up, cut and torn, but he had only a couple of superficial wounds. He had met the enemy where they could come at him only one at a time; he was still the master of any weapon known to space warfare; it had been at no time evident that any outside influence was interfering with the normally rapid functioning of the Boskonians' minds.

He was full of confidence, full of fight, and far from spent when he faced about to consider what he should do about that control room. There was plenty of stuff in there—tougher stuff than he had met up with so far.

Kathryn in her speedster gritted her strong white teeth and clenched her shapely hands into hard little fists. This was bad—very, *very* bad—and it was going to get worse. Closing up fast, she uttered a bitter and exceedingly unladylike expletive.

Couldn't Dad *see*—couldn't the dumb darling *sense*—that he was apt to run out of time almost any minute now?

She fairly writhed in an agony of indecision; and indecision, in a Third-Stage Lensman, is a rare phenomenon indeed. She wanted intensely to take over, but if she did, was there any way this side of Pâlain's purple hells that she could cover up her tracks?

There was none—yet.

TO BE CONTINUED.

THE EXPENSIVE SLAVES

BY RENÉ LAFAYETTE

On a planet with a climate as cruel as that one, inhabited by the gang it was, cruelty to slaves was an "of course" matter. But not every type of slave could respond so effectively.

Illustrated by Cartier

George Jasper Arlington fancied himself as an empire builder. He had gone up to Mizar in Ursa Major when he was ten and simply by the dint of sheer survival had risen to grandeur on Dorab of that system. His huge bulk defied Dorab's iciness and his inexhaustible energy overrode the cold paralyzed government. It might have been said that George Jasper Arlington *was* Dorab, for nothing moved there unless his shaggy head gave the jerk.

He had overcome the chief obstacle of the place, which made for riches. In the early days of the second millennium of space travel, when mankind was but sparsely settling the habitable worlds, land was worth nothing—there was too much of it. But it is an economic principle that when land is to be had for little then there are but few men to work it and wealth begins to consist not of vast titlings of soil but numbers of men to work it. Inevitably, when man not earth is

the scarcity, capital invests itself in human beings and slavery, regardless of the number of laws which may be passed against it, is practiced everywhere.

But George Jasper Arlington, thundrous lord of Dorab, had evolved two answers and so he had become rich.

The first of these was the simple transportation plan whereby people in "less advantageous" areas were given transport to and land on Dorab in return for seven years labor for George Jasper Arlington. He had created a space fleet of some size and he could afford this. But sooner or later it was certain to be discovered that the man who could live on Dorab seven years as a laborer had not been born and so there came a time when recruits for his project answered not the lurid advertisements of George Jasper Arlington. Indeed in some systems, they threw filth at the posters.

But none of this was the business of the Universal Medical Society, for man, it seemed, would be man, and big fleas ate smaller ones inevitably. It was the second method which brought the Soldiers of Light down upon the magnificient G. J. Arlington, in the form of one of their renowned members, Ole Doc Methuselah.

Located here and there throughout space were worlds which held no converse with man. Because of metabolism, atmosphere, gravity and such many thousands of "peoples" were utterly isolated and unapproachable. Further, they did not want to be approached for what possible society could they have formed with a carbon one *g* being? Man now and then explored such worlds in highly insulated ships and suits, beheld the weird beings, gaped at the hitherto unknown physiological facts and then got out rapidly. For a two-foot "man," for instance, who ate pumice and weighed two tons—Earth—had about as much in common with a human being as a robot with a cat. And so such worlds were always left alone. And therein lay the genius of George Jasper Arlington, lordly in his empire on Dorab.

He had sent out expeditions to surrounding systems, had searched and sifted evidence and had at last discovered the people of Sirius Sixty-eight. These he had investigated, sampled, analyzed and finally fought and captured. He had brought nine hundred of them to Dorab to labor in the wastes—and then the employees, the overseers, of George Jasper Arlington had begun to sicken and die. He reacted violently.

Ole Doc Methuselah, outward bound in the *Morgue* on important affairs, received the Medical Center flash.

IF CONVENIENT YOU MIGHT LOOK IN ON DORAB-MIZAR WHERE UNKNOWN DISEASE DECIMATES PLANET. DR. HOLDEN WON INTERGALACTIC TAMERLANE CHESS CHAMPIONSHIP. MISS ROGERS WOULD LIKE A FLASK OF MIZAR MUSK IF YOU STOP. BEST. FOLLINGSBY.

Ole Doc altered course and went back to the dining salon to eat dinner. The only controls he had there were the emergency turn, speed and stop buttons, but recently the *Morgue* had been equipped with the Speary Automatic Navigator—Ole Doc had not trusted the thing for the first hundred and twenty years it had been out but had finally let them put one in—and she now responded to the command, "Dorab-Mizar, capital" and went on her own way.

Hypocrates, his ageless slave, bounced happily about the salon, ducking into the galley for new dishes quoting Boccaccio, a very ancient author, phonograph-record-wise. When he had served the main course on a diamond set platter of pure gold and when he saw that his beloved Ole Doc was giving the wild goose all the attention it deserved. the weird little creature began to chant yet another tale, "Rappachini's Daughter" wherein an aged medic, to revenge himself upon a rival, fills up his own daughter on poison to which he immunizes her and then sets her in the road of his rival's son who, of course, is far from proof against the virulence of the lovely lady.

Although the yarn had lain quietly amongst his books—which library Hypocrates steadily devoured—Ole Doc had not heard of it for two or three hundred years. He thought now of all the advantages he had over that ancient Italian writer. Why he knew of a thousand ways at least to make a being sudden death to any other being.

Maybe, he mused over dessert, it was just as well that people didn't dig into literature any more but contented themselves on sparadio thrillers and washboard weepers. From all the vengeance, provincialism, wars and governments he had seen of late, such devices could well depopulate the galaxies.

But his thoughts paused at the speaker announcement:

"We are safely landed at Dorab-Mizar, capital Nanty, main space field, conditions good but subarctic cold." That was the *Morgue* talking. Ole Doc could not quite get used to his trusty old space can having a dulcet voice.

Hypocrates got him into a lead fiber suit and put a helmet on his head and armed him with kit and blasters and then stood back to admire him and, at the same time, check him out. Hypocrates was small, four-armed and awful to behold, but where Ole Doc was concerned, the little creature was life itself.

Ole Doc stepped through the spaceport and stopped.

In six hundred years of batting about space, Ole Doc had seldom seen a gloomier vista.

The world of Dorab had an irregular orbit caused by the proximity of two stars. It went between them and as they moved in relation to each other, so it moved, now one, now the other taking it. A dangerous situation at best, it did things to the climate. The temperatures varied between two hundred

above and ninety-one below zero and its seasons were impossible to predict with accuracy. The vegetation had adapted itself through the eons and had a ropy, heavily insulated quality which gave it a forbidding air. And every plant had developed protection in the form of thorns or poisons. Inhibited by cold, every period of warmth was attended by furious growing. The ice would turn into vast swamps, the huge, almost sentient trees would grow new limbs and send them intertwining until all the so-called temperate zone was a canopied mass.

But now, with a winter almost done, the trees were thick black stumps standing on an unlimited vista of blue ice. It was much too cold to snow. The sky was blackish about Mizar's distant glare. No tomb was ever more bleak nor more promising of death. For the trees seemed dead, the rivers were dead, the sky was dead and all was killed with cold.

Ole Doc boosted his heater up, wrapped his golden cloak about him and bowing his head to a roaring blast forged toward a small black hut which alone marked this as a field.

He assumed instantly that life lived below surface and he was not wrong. He passed from the field into a tunnel and it was very deep into this that he encountered his first man.

The wild-eyed youngster leaped up and said, all in a breath, "You are a Soldier of Light. I have been posted here for five days awaiting your arrival. We are dying. Dying, all of us! Come quickly!" And he sped away, impatiently pausing at each bend to see that Ole Doc was certainly following.

They came into the deserted thoroughfares where shop faces were closed with heavy timbers and where only a few lights gleamed feebly. They passed body after body lying in the gutters, unburied, rotting and spoiling the already foul air of the town. They skirted empty warehouses and broken villas and came at last to a high, wide castle chiseled from the native basalt.

Ole Doc followed the youth up the ebon steps and into a scattered guard room. Beyond, offices were abandoned and papers lay like snow. Outside a door marked "George Jasper Arlington" the youth stopped, afraid to go any farther. Ole Doc went by him and found his man.

He had eyes like a caged lion and his hair massed over his eyes. He was a huge brute of a man, with strength and decision in every inch of him. It had taken such a man to create all that Dorab had become.

"I am Arlington," he said, leaping up from his bed where, a moment before he had been asleep. "I see you are a Soldier o Light. I will pay any fee. This is disaster! And after all I hav done! Thank God you people got my wire. Now, get to work."

"Just a moment," smiled Ole Doc. "I am a Soldier of Light,

yes. But we take no fees. I make no promises about ridding you of any plague which might be on you. I am here to investigate, as a matter of medical interest, any condition you might have."

"Nonsense! Every man owes a debt to humanity. You see here the entire human population of Dorab dying. You have to do something. I will make it well worth your while. And I am not to be deluded that there lives a man without a price.

"Dorab, doctor, is worth some fifteen trillion dollars. Of that I own the better part. We raise all the insulating fiber used anywhere for spaceships. That very suit you wear is made of it. Don't you think that is worth saving?"

"I didn't say I wouldn't try," said Ole Doc. "I only said I couldn't promise. Now where did this epidemic start and when?"

"About three months ago. I am certain it was brought here from the Sirius planet where we procured our slaves. It broke out on a spaceship and killed half the crew and then it started to work its way through the entire planet here. By—"

"Is there another doctor here?"

"No. There were only two. Not Soldiers of Light, naturally. Just doctors. They died in the first part of the epidemic. You have to do something!"

"Will you show me around?"

A look of pallor came over Arlington's big face. For all his courage in other fields, it was gone in this. "I must stay here to be near Central. The slave guards have withdrawn and there may be an uprising."

"Ah. Of slaves? What slaves?"

"The people we brought from Sirius Sixty-eight. And good slaves they've been. I wouldn't trade one for thirty immigrants. They're cheap. They cost us nothing except their transportation."

"And their food."

"No," said Arlington, looking sly. "That's the best part of it. They eat nothing that we can discover. No food expense at all. We can't have them running away—not that they'd get far in this weather. They make excellent loggers. They never tire. And whatever the disease our people got on Sirius Sixty-eight—"

"Have any slaves died?"

"None."

"Ah," said Ole Doc. "Do these slaves have their own leader?"

"No. That is, not a leader. They have something they call a *cithw*, a sort of medicine man who says their prayers for them."

"You've talked this over with him, of course."

"Me? Why should I talk to a filthy native?"

"Sometimes they can help quite a bit," said Ole Doc.

"Rot!" said Arlington. "We are superior to them in culture and weapons and that makes them inferior to us. Fair game! And we need them here. What good were they doing anyone on Sirius Sixty-eight?"

"One never knows, does one," said Ole Doc. He was beginning to dislike George Jasper Arlington, for all the fact that one, when he has

lived several hundred years is likely to develop an enormous amount of tolerance.

"I think I had better look around," said Ole Doc. "I'll let you know."

But as he touched the handle of the door a red light flashed on Arlington's Central and an hysterical voice said: "Chief! They've beat it!"

"Stop them!"

"I can't. I haven't got a guard that will stand up to them. They're scared. They say these goo-goos are carrying the plague. Everybody has skipped. In another twenty minutes the whole gang of them will be in the capital!"

"I withdraw my non-slaying order. You can shoot them if you wish. But, stop them!"

Ole Doc eased himself out of the door. He stood for a little while, the cold blasts seeping down through the air shafts and stirring the abandoned papers. The gold glass of his helmet frosted a trifle and he absently adjusted his heat.

Behind him, through the partly closed door, Arlington's voice went on, issuing orders, trying to head off the escaped slaves, trying to stir the fear-paralyzed city into action.

"They sent a doc," Arlington was telling someone, a government officer, "but he's just a kid. Doesn't look more than twenty and he's just as baffled as we are. So don't count on it . . . Well, all we know about them soldiers after all is their reputation. I never seen one before, did you? . . . That's what you keep saying, but without slaves, you might as well quit the planet. Who'd work timber? . . ."

Ole Doc looked down the empty corridors. He didn't know why he should save the planet. He had prejudices against slavery and the people who employed it. Somehow, away back in Nineteen Forty-six when he graduated from Johns-Hopkins in Baltimore, Maryland, people had got the idea that human beings should be free and that Man, after all, was a pretty noble creature intended for very high destinies. Some of that had been forgotten as the ages marched on but Ole Doc had never failed to remember.

He hitched up his blasters and went out to meet the slaves.

They were at the eighteenth barrier of the city, in a tunnel of shallow roof and frozen floor and they were confronting a captain of guards almost hysterical with the necessity of keeping them back.

"Son," said Ole Doc, peering down the long corridor at the first ranks of the slaves, "you better put that machine blaster away before somebody gets hurt. I think those people have stopped being afraid."

The captain had not been aware of company. His two men were just as frightened as himself and the three jumped about to face Ole Doc. In the darkness the buttons of the cloak were as luminescent as panther eyes.

"What language do they speak?" said Ole Doc.

"God knows!" said the captain,

"but they understand *lingua spatium*. Who are you?"

"Just a medic that drifted in," said Ole Doc. "I hear they have a leader they call a *cithw*. Do you suppose you could get him to meet me halfway up that passageway?"

"Are you crazy?"

"I have occasionally suspected it," said Ole Doc. "Sing out."

A short parley at respectful distance ensued and the uneasy mass at the other end of the corridor stepped back, leaving a tall, ancient being to the fore.

Ole Doc gave a nod to the captain and dropped over the barrier. The cold wind stired his cloak and the way was dark under the failing power supply of the city. He stopped halfway.

The ancient one came tremblingly forward, not afraid, only aged. Ole Doc had not known what strange form of being to expect and he was somewhat startled by the ordinariness of the creature. Two eyes, two arms, two legs. Why, except for his deep gray color and the obvious fact that he was not of flesh, he might well have been any human patriarch.

He wore white bands about his wrists and forehead and a heavy apron on which was painted a scarlet compass and a star. Wisdom and dignity shone in his eyes. Was this a slave?

In *lingua spatium* Ole Doc saluted him.

"There is trouble," said Ole Doc. "I am your friend." There are but four hundred and eighty-nine words in *lingua spatium* but they would serve here.

The old creature paused and saluted Ole Doc. "There are no friends to the Kufra on Mizar's Dorab."

"I am not of Dorab-Mizar. I belong to no world. I salute you as a *cithw* for this I also may be called. You are in trouble."

"In grievous trouble, wise one. My people are hungry. They are a free people, wise one. They have homes and sons and lands where light shines."

"What do your people eat, *cithw?*"

"Kufra, wise one. That is why we are called the Kufra people."

"And what is this kufra, *cithw?*"

The ancient one paused and thought and shook his head at last. "It is kufra, wise one. There is none here."

"How often do you eat this, *cithw?*"

"Our festivals come each second year and it is then we feast upon the sacred food."

"What is meant by year, wise one?"

"A year, wise one. I cannot tell more. We are not of the galactic empire. We know little of the human save what we have learned here. They call our home Sirius Sixty-eight but we call it Paradise, wise one. We long to return. These frozen snows and dead faces are not for us."

"I must know more, *cithw*. Is there sickness amongst your people?"

"There is not, wise one. There

has never been what you call sickness and we saw it only here for the first time. Wise one, if you are a man of magic among these peoples, free us from this living death. Free us and we shall worship you as a god, building bright temples to your name as a deliverer of our people. Free us, wise one if you have the power."

Ole Doc felt a choke of emotion, so earnest were these words, so real the agony in this being's soul.

"Return to your places here and I shall do everything I can to free you," said Ole Doc.

The old one nodded and turned back. Shortly, after a conversation with other leaders, the slaves left the corridor. Ole Doc met the captain.

"They are going back to quarters," said Ole Doc. "I must do what I can for them and for you."

"Who are you anyway?" asked the captain.

"A Soldier of Light," said Ole Doc.

The captain and the men stood speechless and watched the golden cloak flow out of sight beyond a turn.

Hypocrates met Ole Doc, as ordered by communicator, outside the government house, carrying some fifteen hundred pounds of equipment under one arm. Hypocrates was lawful in everything but obeying Newton's law of gravity.

"'When plague strikes an area it is usual to issue yellow tickets to all transport and then proceed on certain well defined lines—'" automatically he was quoting a manual, meanwhile looking about him at the chill, deserted squares of the subsurface city.

Ole Doc saw with satisfaction that the little fellow was dressed in a cast-off insulator, which though much too large was fine protection against anything except blasters.

Shortly, on the broad steps of the castle, the instruments were laid out in orderly shining rows, a small table was set up, a number of meters were lined to one side and a recorder was in place by the table.

Hypocrates went off in a rush and came back carrying a stack of bodies which he dumped with a thud on the steps. He kicked the wandering arms and legs into line and sniffed distastefully at the mound, some of which had been there too long.

Ole Doc went methodically to work. He took up a lancet and jutted it at the corpse of a young girl which was promptly banged down on the table. Ole Doc, hampered by his gloves, went quickly to work while Hypocrates handed him glittering blades and probes.

In an upper window of the government house the big face of one George Jasper Arlington came into view. His eyes popped as he stared at the scene on the steps and then, ill, he slammed down the blind.

At first a small, timid knot of people had come forward but it had not taken the officious wave of Hypocrates to send them scurrying.

The abattoir then fascinated nothing but the professional curiosity of Ole Doc.

"Would have died from Grave's Disease anyway," said Ole Doc looking at the table and then at the full buckets. "But that couldn't be the plague. Next!"

The lancet glittered under the flashing arc and with a neat perfection which could separate cell from cell, nerve from tissue, nay the very elements from one another, Ole Doc continued on his intent way.

"Next!"

"Next!"

"Next!"

And then, "Hypocrates, look at these slides for me."

There was one from each and the little creature bent a microscope over them and counted in a shrill singsong.

"Right," said Ole Doc. "Anemia. Anemia bad enough to kill. Now

what disease would cause that?"

Phonograph-record-wise Hypocrates began to intone the sixty-nine thousand seven hundred and four known diseases but Ole Doc was not listening. He was looking at the remains of the girl who would have died from Grave's Disease anyway and then at the window of George Jasper Arlington's office.

"Next," said Ole Doc hopelessly.

It was a scrawny woman who had obviously suffered for some time from malnutrition. And Ole Doc, with something like pity, began his work once more.

The snick of blade and the drip from the table were all the sounds in the chilly street. And then a sharp exclamation from Ole Doc.

He seized the liver and held it closer to the light and then, with a barked command at Hypocrates, raced up the steps and kicked open the door of George Jasper Arlington's office.

The big man stared in alarm and then stumbled away from the grisly thing in Ole Doc's hand.

"You've got to return the slaves to Sirius Sixty-eight!" said Ole Doc.

"Return them? Get out of here with that thing. Why should I spend a fortune doing that? Get out!"

"You'll spend it because I tell you to," said Ole Doc.

"If you mean they've caused the plague and will continue it, I'll have them shot but that's all."

"Oh no you won't," said Ole Doc. "And if you see fit to disobey me and shoot them, at least wait until I have departed. If you kill them, you'll leave the poison here forever."

"Poison!"

"There is an old tale of a man who poisoned his daughter gradually until she was immune and then sent her to kill his rival's son. I am afraid you are up against that. You'll die—everyone on this planet and you included will die if you shoot those slaves. And you will die if you keep them."

"Get out!" said George Arlington.

Ole Doc looked at the thing he carried and smiled wryly through his helmet face. "Then you don't leave me much chance."

"Chance for what?"

"To save you. For unless you do this thing, I have no recourse."

From a pocket in the hem of his golden cloak he drew a sheaf of yellow papers. Dropping his burden on the desk he seized a pen and wrote:

George Jasper Arlington
Never

"What is that?"

"A personal yellow ticket. I go now to give them to all your spaceships, all your captains, all your towns and villages. No one will come to you, ever. No one can go from here ever. There will be no export, no import. I abandon you and all space abandons you. I condemn you to the death you

sought to give your slaves. I have spoken."

And he threw the yellow paper on the desk before Arlington and turned to leave.

"Wait. Have you got that power? Look! Listen to reason. Listen, doctor. You can't do this. I haven't tried to buck you. I am trying to co-operate. I'll—Wait! What is wrong? What *is* the disease, the poison?"

"This," said Ole Doc, "is the remains of a malignant and commonly fatal tumor of the particular specie of colloid. It is a cancer, Arlington. And now I am going about my business since you will not attend to yours."

"Cancer! But that's not catching! I know that's not catching."

"Look at it," said Ole Doc.

Arlington looked away. "What did you say I was to do?"

"Take all available transport and return the Kufra people to Sirius Sixty-eight. Every one of them. Only then can you live. I will have to treat your crews and make other arrangements before departure. But I will only do this if you promise that no single slave will be shot or mauled. That is vital, understand?"

"What have I done to deserve this. It will cost me half my fortune. I will have no laborers. Isn't there—"

"There is not," said Ole Doc. "I suggest you employ the best engineers in the Galaxy to provide machinery for your timber work. When you have done that I will send you a formula so that human beings can stand the cold for a short time without injury. I will do this. But there is your communicator."

George Jasper Arlington began to look hopeful. But it was fear which made him give the orders, fear and the thing in Ole Doc's hand.

Four hours later, at the main spaceport, Ole Doc finished giving his orders to the departing crews. They were men of space and they knew their galaxies. They listened reverently to the commands of a Soldier of Light, painted their clothing and helmets as he told them, fixed their compartments at his orders and then began the loading of the suddenly docile slaves.

In the semidarkness of the subsurface hangars, a few moments before the first ship would burst out into the freedom of space, on course of Sirius Sixty-eight, Ole Doc nodded to the *cithw*.

The ancient one would have shaken Ole Doc's hand but Ole Doc adroitly avoided it, smiling through his visor.

"We are grateful," said the ancient one. "You have delivered us, Soldier of Light, and to you we shall build a shrine so that all our people may know. To you we shall send prayers as to any other god. You have delivered us."

Ole Doc smiled. And from his kit he took a certificate, brilliant yellow, of eternium satin. It stated:

Quarantine!

Know all wanderers of space, all captains of ships, generals of armies, ministers of governments, princes, kings and rulers whatsoever that this

Planet Sirius Sixty-eight

Has been declared in perpetual quarantine forever and that no inhabitant of this planet is to depart from it for any cause or reason whatsoever until the end of time.

By my hand and seal, under the watchfulness of God, by the power invested in me, so witness my command:

ODM
Soldier of Light

"Enshrine this," said Ole Doc when he had explained it. "Enshrine this and forget the rest. And show it to all who would come for you and be deluded by your manlike appearance into thinking you could be slaves. None will violate it for the men who conquer space are not the men who rule its petty planets and they know. Good-by, then. God bless you."

The ancient one clutched at the hem of his cloak and kissed it and then, certificate securely clutched, boarded the first ship.

Six minutes later the port was empty and the slaves were gone.

But the work of Ole Doc was not yet done and through sixteen wearisome hours he labored over the inhabitants of the city who had contacted the slaves even indirectly. Fortunately it took but a short time to correct, with proper rays, all the effects that might have been made.

George Jasper Arlington, there on the steps where the station had been set up, looked with awe at Ole Doc.

"I never met one of you guys before," said Arlington. "I guess I must have been mistaken. I thought you were just some kid even if I'd always heard about Soldiers of Light. They sure take you in young."

"They do at that," said Ole Doc, seven hundred and ninety-two Earth years young.

"Can't you tell me more about what was wrong?"

"I don't mind telling you," said Ole Doc, "now that they've gone. Slavery is a nasty thing. It is an expensive thing. The cheapest slave costs far too much in dignity and decency. For men are created to do better things than enslave others. You'll work out your industries some better way I know."

"Oh, sure. You got a swell idea. But can't you tell me what was wrong?"

"Why, I don't mind," said Ole Doc. "It was a matter of metabolism. All creatures you know, haven't the same metabolism. They run on various fuels. In the galaxies we've found half a hundred different ones in use by plants, animals and sentient beings. My man there runs, weirdly enough, on gypsum. Others run on silicon. You and I happen to run on carbon, which is after all a rather specialized element. Earth just got started that way. Your slaves had a new one. I knew it as soon as I saw that healed cancer."

"Healed?"

"Yes. Only the woman was healed too well."

"I don't get it."

"Well," said Ole Doc, "you will. There was a fine reason not to shoot the Kufra people or to keep them."

"Well?"

"Why, they had a very efficient metabolism which accounted for their great weight and physical composition, also for their endurance and their apparent small need of food. They," said Ole Doc quietly, "had a plutonium metabolism."

"A plu . . . oh my God!"

"On their planet, so close to the Sirius twin, everything is upper scale and plutonium is the carbon of higher range. So you couldn't have shot them or buried them in mass graves, you see. They were, I think, rather expensive slaves."

In a voice of hushed respect Arlington said, "Is there anything I can give you?"

"Nothing," said Ole Doc. And then, "Oh yes! You have Mizar musk here. I'll take a bottle of it for a friend."

Which was how Miss Rogers received a full hogshead of Mizar musk and why the Soldiers of Light, wandering through a thousand galaxies, bear to this day the right to forbid the transportation of slaves from anywhere to anywhere on the pain of any one of those peculiar little ways they have of enforcing even their most capricious laws.

THE END.

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THUNDER AND ROSES

BY THEODORE STURGEON

Atomic war can produce strange situations—for an atomic bomb can explode more than once! And it may be that the victims of the attack dare not reply!

Illustrated by Elliot

When Pete Mawser learned about the show, he turned away from the GHQ bulletin board, touched his long chin, and determined to shave. This was odd, because the show would be video, and he would see it in his barracks.

He had an hour and a half. It felt good to have a purpose again—even shaving before eight o'clock. Eight o'clock Tuesday, just the way it used to be. Everyone used to catch that show on Tuesday. Everyone used to say, Wednesday morning, "How about the way she

sang 'The Breeze and I' last night?" "Hey—did you hear Starr last night?"

That was a while ago, before all those people were dead, before the country was dead. Starr Anthim, institution, like Crosby, like Duse, like Jenny Lind, like the Statue of Liberty.

(Liberty had been one of the first to get it, her bronze beauty volatilized, radioactive, and even now being carried about in vagrant winds, spreading over the earth—)

Pete Mawser grunted and forced his thoughts away from the drifting, poisonous fragments of a blasted Liberty. Hate was first. Hate was ubiquitous, like the increasing blue glow in the air at night, like the tension that hung over the base.

Gunfire crackled sporadically far to the right, swept nearer. Pete stepped out of the street and made for a parked ten wheeler. There's a lot of cover in and around a ten wheeler.

There was a Wac sitting on the short running board.

At the corner a stocky figure backed into the intersection. The man carried a tommy-gun in his arms, and he was swinging it to and fro with the gentle, wavering motion of a weathervane. He staggered toward them, his gun muzzle hunting. Someone fired from a building and the man swiveled and blasted wildly at the sound.

"He's—blind," said Pete Mawser, and added, "He ought to be," looking at the tattered face.

A siren keened. An armored jeep slewed into the street. The full-throated roar of a brace of .50 caliber machine guns put a swift and shocking end to the incident.

"Poor crazy kid," Pete said softly. "That's the fourth I've seen today." He looked down at the Wac. She was smiling.

"Hey!"

"Hello, Sarge." She must have identified him before, because now she did not raise her eyes nor her voice. "What happened?"

"You know what happened. Some kid got tired of having nothing to fight and nowhere to run to. What's the matter with you?"

"No," she said. "I don't mean that." At last she looked up at him. "I mean all of this. I can't seem to remember."

"You . . . well, gee, it's not easy to forget. We got hit. We got hit everywhere at once. All the big cities are gone. We got it from both sides. We got too much. The air is becoming radioactive. We'll all—" He checked himself. She didn't know. She'd forgotten. There was nowhere to escape to, and she'd escaped inside herself, right here. Why tell her about it? Why tell her that everyone was going to die? Why tell her that other, shameful thing: that we hadn't struck back?

But she wasn't listening. She was still looking at him. Her eyes were not quite straight. One held his but the other was slightly

shifted and seemed to be looking at his temple. She was smiling again. When his voice trailed off she didn't prompt him. Slowly, he moved away. She did not turn her head, but kept looking up at where he had been, smiling a little. He turned away, wanting to run, walking fast.

(How long can a guy hold out? When you're in the army they try to make you be like everybody else. What do you do when everybody else is cracking up?)

He blanked out the mental picture of himself as the last one left sane. He'd followed that one through before. It always led to the conclusion that it would be better to be one of the first. He wasn't ready for that yet.

Then he blanked that out, too. Every time he said to himself that he wasn't ready for that yet, something within him asked "why not?" and he never seemed to have an answer ready.

(How long could a guy hold out?)

He climbed the steps of the QM Central and went inside. There was nobody at the reception switchboard. It didn't matter. Messages were carried by guys in jeeps, or on motorcycles. The Base Command was not insisting that anybody stick to a sitting job these days. Ten deskmen would crack up for every one on a jeep, or on the soul-sweat squads. Pete made up his mind to put in a little stretch on a squad tomorrow. Do him good. He just hoped that this time the adjutant wouldn't burst into tears in the middle of the parade ground. You could keep your mind on the manual of arms just fine until something like that happened.

He bumped into Sonny Weisefreund in the barracks corridor. The tech's round young face was as cheerful as ever. He was naked and glowing, and had a towel thrown over his shoulder.

"Hi, Sonny. Is there plenty of hot water?"

"Why not?" grinned Sonny. Pete grinned back, cursing inwardly. Could anybody say anything about anything at all without one of these reminders? Sure there was hot water. The QM barracks had hot water for three hundred men. There were three dozen left. Men dead, men gone to the hills, men locked up so they wouldn't—

"Starr Anthim's doing a show tonight."

"Yeah. Tuesday night. Not funny, Pete. Don't you know there's a war—"

"No kidding," Pete said swiftly. "She's here—right here on the base."

Sonny's face was joyful. "Gee." He pulled the towel off his shoulder and tied it around his waist. "Starr Anthim here! Where are they going to put on the show?"

"HQ, I imagine. Video only. You know about public gatherings." And a good thing, too, he thought. Put on an in-person show, and some torn-up GI would crack during one of her numbers. He himself would get plenty mad over

a thing like that—mad enough to do something about it then and there. And there would probably be a hundred and fifty or more like him, going raving mad because someone had spoiled a Starr Anthim show. That would be a dandy little shambles for her to put in her memory book.

"How'd she happen to come here, Pete?"

"Drifted in on the last gasp of a busted-up Navy helicopter."

"Yeah, but why?"

"Search me. Get your head out of that gift-horse's mouth."

He went into the washroom, smiling and glad that he still could. He undressed and put his neatly folded clothes down on a bench. There were a soap wrapper and an empty toothpaste tube lying near the wall. He went and picked them up and put them in the catchall. He took the mop which leaned against the partition and mopped the floor where Sonny had splashed after shaving. Got to keep things squared away. He might say something if it were anyone else but Sonny. But Sonny wasn't cracking up. Sonny always had been like that. Look there. Left his razor out again.

Pete started his shower, meticulously adjusting the valves until the pressure and temperature exactly suited him. He didn't do anything slapdash these days. There was so much to feel, and taste, and see now. The impact of water on his skin, the smell of soap, the consciousness of light and heat, the very pressure of standing on the soles of his feet—he wondered vaguely how the slow increase of radioactivity in the air, as the nitrogen transmuted to Carbon Fourteen, would affect him if he kept carefully healthy in every way. What happens first? Do you go blind? Headaches, maybe? Perhaps you lose your appetite. Or maybe you get tired all the time.

Why not go look it up?

On the other hand, why bother? Only a very small percentage of the men would die of radioactive poisoning. There were too many other things that killed more quickly, which was probably just as well. That razor, for example. It lay gleaming in a sunbeam, curved and clean in the yellow light. Sonny's father and grandfather had used it, or so he said, and it was his pride and joy.

Pete turned his back on it, and soaped under his arms, concentrating on the tiny kisses of bursting bubbles. In the midst of a recurrence of disgust at himself for thinking so often of death, a staggering truth struck him. He did not think of such things because he was morbid, after all! It was the very familiarity of things that brought death-thoughts. It was either "I shall never do this again" or "This is one of the last times I shall do this." You might devote yourself completely to doing things in different ways, he thought madly. You might crawl across the floor this time, and next time walk across on your hands. You

might skip dinner tonight, and have a snack at two in the morning instead, and eat grass for breakfast.

But you had to breathe. Your heart had to beat. You'd sweat and you'd shiver, the same as always. You couldn't get away from that. When those things happened, they would remind you. Your heart wouldn't beat out its *wunklunk, wunklunk* any more. It would go *one-less, one-less,* until it yelled and yammered in your ears and you had to make it stop.

Terrific polish on that razor.

And your breath would go on, same as before. You could sidle through this door, back through the next one and the one after, and figure out a totally new way to go through the one after that, but your breath would keep on sliding in and out of your nostrils like a razor going through whiskers, making a sound like a razor being stropped.

Sonny came in. Pete soaped his hair. Sonny picked up the razor and stood looking at it. Pete watched him, soap ran into his eye, he swore, and Sonny jumped.

"What are you looking at, Sonny? Didn't you ever see it before?"

"Oh, sure. Sure. I just was—" He shut the razor, opened it, flashed light from its blade, shut it again. "I'm tired of using this, Pete. I'm going to get rid of it. Want it?"

Want it? In his foot locker, maybe. Under his pillow. "Thanks no, Sonny. Couldn't use it."

"I like safety razors," Sonny mumbled. "Electrics, even better. What are we going to do with it?"

"Throw it in the . . . no." Pete pictured the razor turning end over end in the air, half open, gleaming in the maw of the catch-all. "Throw it out the—" No. Curving out into the long grass. You might want it. You might crawl around in the moonlight looking for it. You might find it.

"I guess maybe I'll break it up."

"No," Pete said. "The pieces—" Sharp little pieces. Hollow-ground fragments. "I'll think of something. Wait'll I get dressed."

He washed briskly, toweled, while Sonny stood looking at the razor. It was a blade now, and if you broke it, there would be shards and glittering splinters, still razor sharp. You could slap its edge into an emery wheel and grind it away, and somebody could find it and put another edge on it because it was so obviously a razor, a fine steel razor, one that would slice so— "I know. The laboratory. We'll get rid of it," Pete said confidently.

He stepped into his clothes, and together they went to the laboratory wing. It was very quiet there. Their voices echoed.

"One of the ovens," said Pete, reaching for the razor.

"Bake ovens? You're crazy!"

Pete chuckled. "You don't know this place, do you? Like everything else on the base, there

was a lot more went on here than most people knew about. They kept calling it the bake shop. Well, it *was* research headquarters for new high-nutrient flours. But there's lots else here. We tested utensils and designed beet-peelers and all sorts of things like that. There's an electric furnace in here that—" He pushed open a door.

They crossed a long, quiet, cluttered room to the thermal equipment. "We can do everything here from annealing glass, through glazing ceramics, to finding the melting point of frying pans." He clicked a switch tentatively. A pilot light glowed. He swung open a small, heavy door and set the razor inside. "Kiss it good-by. In twenty minutes it'll be a puddle."

"I want to see that," said Sonny. "Can I look around until it's cooked?"

"Why not?"

(Everybody around here always said "Why not?")

They walked through the laboratories. Beautifully equipped, they were, and too quiet. Once they passed a major who was bent over a complex electronic hookup on one of the benches. He was watching a little amber light flicker, and he did not return their salute. They tiptoed past him, feeling awed at his absorption, envying it. They saw the models of the automatic kneaders, the vitaminizers, the remote signal thermostats and timers and controls.

"What's in there?"

"I dunno. I'm over the edge of my territory. I don't think there's anybody left for this section. They were mostly mechanical and electronic theoreticians. The only thing I know about them is that if we ever needed anything in the way of tools, meters, or equipment, they had it or something better, and if we ever got real bright and figured out a startling new idea, they'd already have built it and junked it a month ago. Hey!"

Sonny followed the pointing hand. "What?"

"That wall section. It's loose, or . . . well, what do you know?"

He pushed at the section of wall, which was very slightly out of line. There was a dark space beyond.

"What's in there?"

"Nothing, or some semiprivate hush-hush job. These guys used to get away with murder."

Sonny said, with an uncharacteristic flash of irony, "Isn't that the Army theoretician's business?"

Cautiously they peered in, then entered.

"Wh . . . *hey!* The door!"

It swung swiftly and quietly shut. The soft click of the latch was accompanied by a blaze of light.

The room was small and windowless. It contained machinery—a "trickle" charger, a bank of storage batteries, an electric-powered dynamo, two small self-starting gas-driven light plants and a Diesel complete with sealed

compressed-air starting cylinders. In the corner was a relay rack with its panel-bolts spot-welded. Protruding from it was a red-top lever. Nothing was labeled.

They looked at the equipment wordlessly for a time and then Sonny said, "Somebody wanted to make awful sure he had power for something."

"Now, I wonder what—" Pete walked over to the relay rack. He looked at the lever without touching it. It was wired up; behind the handle, on the wire, was a folded tag. He opened it cautiously. "To be used only on specific orders of the Commanding Officer."

"Give it a yank and see what happens."

Something clicked behind them. They whirled. "What was that?"

"Seemed to come from that rig beside the door."

They approached it cautiously. There was a spring-loaded solenoid attached to a bar which was hinged to drop across the inside of the secret door, where it would fit into steel gudgeons on the panel.

It clicked again. "A Geiger," said Pete disgustedly.

"Now why," mused Sonny, "would they design a door to stay locked unless the general radioactivity went beyond a certain point? That's what it is. See the relays? And the overload switch there? And this?"

"It has a manual lock, too," Pete pointed out. The counter clicked again. "Let's get out of here. I got one of those things built into my head these days."

The door opened easily. They went out, closing it behind them. The keyhole was cleverly concealed in the crack between two boards.

They were silent as they made their way back to the QM labs. The small thrill of violation was gone, and, for Pete Mawser at least, the hate was back, that and the shame. A few short weeks before, this base had been a part of the finest country on earth. There was a lot of work here that was secret, and a lot that was such purely progressive and unapplied research that it would be in the way anywhere else but in this quiet wilderness.

Sweat stood out on his forehead. They hadn't struck back at their murderers! It was quite well known that there were launching sites all over the country, in secret caches far from any base or murdered city. Why must they sit here waiting to die, only to let the enemy—"enemies" was more like it—take over the continent when it was safe again?

He smiled grimly. One small consolation. They'd hit too hard; that was a certainty. Probably each of the attackers underestimated what the other would throw. The result—a spreading transmutation of nitrogen into deadly Carbon Fourteen. The effects would not be limited to the continent. What ghastly long-range effect the muted radioactivity would have on the over-

seas enemies was something that no one alive today could know.

Back at the furnace, Pete glanced at the temperature dial, then kicked the latch control. The pilot winked out, and then the door swung open. They blinked and started back from the raging heat within, then bent and peered. The razor was gone. A pool of brilliance lay on the floor of the compartment.

"Ain't much left. Most of it oxidized away," Pete grunted.

They stood together for a time with their faces lit by that small shimmering ruin. Later, as they walked back to the barracks, Sonny broke his long silence with a sigh. "I'm glad we did that, Pete. I'm awful glad we did that."

At a quarter to eight they were waiting before the combination console in the barracks. All hands except Pete and Sonny and a wiry-haired, thick-set corporal named Bonze had elected to see the show on the big screen in the mess hall. The reception was better there, of course, but, as Bonze put it, "you don't get close enough in a big place like that."

"I hope she's the same," said Sonny, half to himself.

Why should she be? thought Pete morosely as he turned on the set and watched the screen begin to glow. There were many more of the golden speckles that had killed reception for the past two weeks. Why should anything be the same, ever again?

He fought a sudden temptation to kick the set to pieces. It, and Starr Anthim, were part of something that was dead. The country was dead, a real country—prosperous, sprawling, laughing, grabbing, growing and changing, leprous in spots with poverty and injustice, but healthy enough to overcome any ill. He wondered how the murderers would like it. They were welcome to it, now. Nowhere to go. No one to fight. That was true for every soul on earth now.

"You hope she's the same," he muttered.

"The show, I mean," said Sonny mildly. "I'd like to just sit here and have it like . . . like—"

Oh, thought Pete mistily. Oh—that. Somewhere to go, that's what it is, for a few minutes. "I know," he said, all the harshness gone from his voice.

Noise receded from the audio as the carrier swept in. The light on the screen swirled and steadied into a diamond pattern. Pete adjusted the focus, chromic balance and intensity. "Turn out the lights, Bonze. I don't want to see anything but Starr Anthim."

It *was* the same, at first. Starr Anthim had never used the usual fanfares, fade-ins, color and clamor of her contemporaries. A black screen, then *click!* a blaze of gold. It was all there, in focus; tremendously intense, it did not change. Rather, the eye changed to take it in. She never moved for seconds after she came on; she was there, a portrait, a still face and a white

throat. Her eyes were open and sleeping. Her face was alive and still.

Then, in the eyes which seemed green but were blue flecked with gold, an awareness seemed to gather, and they came awake. Only then was it noticeable that her lips were parted. Something in the eyes made the lips be seen, though nothing moved yet. Not until she bent her head slowly, so that some of the gold flecks seemed captured in the golden brows. The eyes were not, then, looking out at an audience. They were looking at me, and at *me*, and at ME.

"Hello—you," she said. She was a dream, with a kid sister's slightly irregular teeth.

Bonze shuddered. The cot on which he lay began to squeak rapidly. Sonny shifted in annoyance. Pete reached out in the dark and caught the leg of the cot. The squeaking subsided.

"May I sing a song?" Starr asked. There was music, very faint. "It's an old one, and one of the best. It's an easy song, a deep song, one that comes from the part of men and women that is mankind—the part that has in it no greed, no hate, no fear. This song is about joyousness and strength. It's—my favorite. Isn't it yours?"

The music swelled. Pete recognized the first two notes of the introduction and swore quietly. This was wrong. This song was not for . . . this song was part of—

Sonny sat raptly. Bonze lay still.

Starr Anthim began to sing. Her voice was deep and powerful,

but soft, with the merest touch of vibrato at the ends of the phrases. The song flowed from her, without noticeable effort, seeming to come from her face, her long hair, her wide-set eyes. Her voice, like her face, was shadowed and clean, round, blue and green but mostly gold:

"When you gave me your heart,
you gave me the world,
You gave me the night and the day,
And thunder, and roses, and sweet
green grass,
The sea, and soft wet clay.

I drank the dawn from a golden
cup,
From a silver one, the dark,
The steed I rode was the wild west
wind,
My song was the brook and the
lark."

The music spiraled, caroled, slid into a somber cry of muted, hungry sixths and ninths; rose, blared, and cut, leaving her voice full and alone:

"With thunder I smote the evil of
earth,
With roses I won the right,
With the sea I washed, and with
clay I built,
And the world was a place of
light!"

The last note left a face perfectly composed again, and there was no movement in it; it was sleeping and vital while the music curved off and away to the places where music rests when it is not heard.

Starr smiled.

"It's so easy," she said. "So simple. All that is fresh and clean and strong about mankind is in that song, and I think that's all that need concern us about mankind." She leaned forward. "Don't you see?"

The smile faded and was replaced with a gentle wonder. A tiny furrow appeared between her brows; she drew back quickly. "I can't seem to talk to you tonight," she said, her voice small. "You hate something."

Hate was shaped like a monstrous mushroom. Hate was the random speckling of a video plate.

"What has happened to us," said Starr abruptly, impersonally, "is simple, too. It doesn't matter who did it—do you understand that? *It doesn't matter.* We were attacked. We were struck from the east and from the west. Most of the bombs were atomic—there were blast bombs and there were dust bombs. We were hit by about five hundred and thirty bombs altogether, and it has killed us."

She waited.

Sonny's fist smacked into his palm. Bonze lay with his eyes open, quiet. Pete's jaws hurt.

"We have more bombs than both of them put together. We *have* them. We are not going to use them. *Wait!*" She raised her hands suddenly, as if she could

see into each man's face. They sank back, tense.

"So saturated is the atmosphere with Carbon Fourteen that all of us in this hemisphere are going to die. Don't be afraid to say it. Don't be afraid to think it. It is a truth, and it must be faced. As the transmutation effect spreads from the ruins of our cities, the air will become increasingly radioactive, and then we must die. In months, in a year or so, the effects will be strong overseas. Most of the people there will die, too. None will escape completely. A worse thing will come to them than anything they gave us, because there will be a wave of horror and madness which is impossible to us. We are merely going to die. They will live and burn and sicken, and the children that will be born to them—" She shook her head, and her lower lip grew full. She visibly pulled herself together.

"Five hundred and thirty bombs— I don't think either of our attackers knew just how strong the other was. There has been so much secrecy." Her voice was sad. She shrugged slightly. "They have killed us, and they have ruined themselves. As for us—we are not blameless, either. Neither are we helpless to do anything—yet. But what we must do is hard. We must die—without striking back."

She gazed briefly at each man in turn, from the screen. "We must *not* strike back. Mankind is about to go through a hell of his own making. We can be vengeful—or merciful, if you like—and let go with the hundreds of bombs we have. That would sterilize the planet so that not a microbe, not a blade of grass could escape, and nothing new could grow. We would reduce the earth to a bald thing, dead and deadly.

"No—it just won't do. We can't do it."

"Remember the song? *That* is humanity. That's in all humans. A disease made other humans our enemies for a time, but as the generations march past, enemies become friends and friends enemies. The enmity of those who have killed us is such a tiny, temporary thing in the long sweep of history!"

Her voice deepened. "Let us die with the knowledge that we have done the one noble thing left to us. The spark of humanity can still live and grow on this planet. It will be blown and drenched, shaken and all but extinguished, but it will live if that song is a true one. It will live if we are human enough to discount the fact that the spark is in the custody of our temporary enemy. Some—a few—of his children will live to merge with the new humanity that will gradually emerge from the jungles and the wilderness. Perhaps there will be ten thousand years of beastliness; perhaps man will be able to rebuild while he still has his ruins."

She raised her head, her voice tolling. "And even if this is the end of humankind, we dare not take away the chances some other life-form might have to succeed where

we failed. If we retaliate, there will not be a dog, a deer, an ape, a bird or fish or lizard to carry the evolutionary torch. In the name of justice, if we must condemn and destroy ourselves, let us not condemn all life along with us! We are heavy enough with sins. If we must destroy, let us stop with destroying ourselves!"

There was a shimmering flicker of music. It seemed to stir her hair like a breath of wind. She smiled.

"That's all," she whispered. And to each man there she said, "Good night—"

The screen went black. As the carrier cut off—there was no announcement—the ubiquitous speckles began to swarm across it.

Pete rose and switched on the lights. Bonze and Sonny were quite still. It must have been minutes later when Sonny sat up straight, shaking himself like a puppy. Something besides the silence seemed to tear with the movement.

He said, softly: "You're not allowed to fight anything, or to run away, or to live, and now you can't even hate any more, because Starr says 'no.'"

There was bitterness in the sound of it, and a bitter smell to the air.

Pete Mawser sniffed once, which had nothing to do with the smell. He froze, sniffed again. "What's that smell, Son?"

Sonny tested it. "I don't—Something familiar. Vanilla—no . . . No."

"Almonds. Bitter— *Bonze!*"

Bonze lay still with his eyes open, grinning. His jaw muscles were knotted, and they could see almost all his teeth. He was soaking wet.

"Bonze!"

"It was just when she came on and said 'Hello—you, remember?'" whispered Pete. "Oh, the poor kid. That's why he wanted to catch the show here instead of in the mess hall."

"Went out looking at her," said Sonny through pale lips. "I . . . can't say I blame him much. Wonder where he got the stuff."

"Never mind that!" Pete's voice was harsh. "Let's get out of here."

They left to call the meat wagon. Bonze lay watching the console with his dead eyes and his smell of bitter almonds.

Pete did not realize where he was going, or exactly why, until he found himself on the dark street near GHQ and the communications shack. It had something to do with Bonze. Not that he wanted to do what Bonze had done. But then, he hadn't thought of it. What would he have done if he'd thought of it? Nothing, probably. But still—it might be nice to be able to hear Starr, and see her, whenever he felt like it. Maybe there weren't any recordings; yet her musical background was recorded, and the Sig might have dubbed the show off.

He stood uncertainly outside the GHQ building. There was a

cluster of men outside the main entrance. Pete smiled briefly. Rain, nor snow, nor sleet, nor gloom of night could stay the stage-door Johnnie.

He went down the side street and up the delivery ramp in the back. Two doors along the platform was the rear exit of the communications section.

There was a light on in the communications shack. He had his hand out to the screen door when he noticed someone standing in the shadows beside it. The light played daintily on the golden margins of a head and face.

He stopped. "Starr Anthim!"

"Hello, soldier. Sergeant."

He blushed like an adolescent. "I—" His voice left him. He swallowed, reached up to whip off his hat. He had no hat. "I saw the show," he said. He felt clumsy. It was dark, and yet he was very conscious of the fact that his dress shoes were indifferently shined.

She moved toward him into the light, and she was so beautiful that he had to close his eyes. "What's your name?"

"Mawser. Pete Mawser."

"Like the show?"

Not looking at her, he said stubbornly, "No."

"Oh?"

"I mean . . . I liked it some. The song."

"I . . . think I see."

"I wondered if I could maybe get a recording."

"I think so," she said. "What kind of a reproducer have you got?"

"Audiovid."

"A disk. Yes; we dubbed off a few. Wait, I'll get you one."

She went inside, moving slowly. Pete watched her, spellbound. She was a silhouette, crowned and haloed; and then she was a framed picture, vivid and golden. He waited, watching the light hungrily. She returned with a large envelope, called good night to someone inside, and came out on the platform.

"Here you are, Pete Mawser."

"Thanks very—" he mumbled. He wet his lips. "It was very good of you."

"Not really. The more it circulates, the better." She laughed suddenly. "That isn't meant quite as it sounds. I'm not exactly looking for new publicity these days."

The stubborness came back. "I don't know that you'd get it, if you put on that show in normal times."

Her eyebrows went up. "Well!" she smiled. "I seem to have made quite an impression."

"I'm sorry," he said warmly. "I shouldn't have taken that tack. Everything you think and say these days is exaggerated."

"I know what you mean." She looked around. "How is it here?"

"It's O.K. I used to be bothered by the secrecy, and being buried miles away from civilization." He chuckled bitterly. "Turned out to be lucky after all."

"You sound like the first chapter of 'One World or None.'"

He looked up quickly. "What do you use for a reading list—the Government's own *'Index Expurgatorius'?"*

She laughed. "Come now—it isn't as bad as all that. The book was never banned. It was just—"

"—unfashionable," he filled in.

"Yes, more's the pity. If people had paid more attention to it in the Forties, perhaps this wouldn't have happened."

He followed her gaze to the dimly pulsating sky. "How long are you going to be here?"

"Until . . . as long as . . . I'm not leaving."

"You're not?"

"I'm finished," she said simply. "I've covered all the ground I can. I've been everywhere that . . . anyone knows about."

"With this show?"

She nodded. "With this particular message."

He was quiet, thinking. She turned to the door, and he put out his hand, not touching her. "Please—"

"What is it?"

"I'd like to . . . I mean, if you don't mind, I don't often have a chance to talk to— Maybe you'd like to walk around a little before you turn in."

"Thanks, no, sergeant. I'm tired." She did sound tired. "I'll see you around."

He stared at her, a sudden fierce light in his brain. "I know where it is. It's got a red-topped lever and a tag referring to orders of the commanding officer. It's really camouflaged."

She was quiet so long that he thought she had not heard him. Then, "I'll take that walk."

They went down the ramp together and turned toward the dark parade ground.

"How did you know?" she asked quietly.

"Not too tough. This 'message' of yours; the fact that you've been all over the country with it; most of all, the fact that somebody finds it necessary to persuade us not to strike back. Who are you working for?" he asked bluntly.

Surprisingly, she laughed.

"What's that for?"

"A moment ago you were blushing and shuffling your feet."

His voice was rough. "I wasn't talking to a human being. I was talking to a thousand songs I've heard, and, a hundred thousand blond pictures I've seen pinned up. You'd better tell me what this is all about."

She stopped. "Let's go up and see the colonel."

He took her elbow. "No. I'm just a sergeant, and he's high brass, and that doesn't make any difference at all now. You're a human being, and so am I, and I'm supposed to respect your rights as such. I don't. You're a woman, and—"

She stiffened. He kept her walking, and finished, "—and that will make as much difference as I let it. You'd better tell me about it."

"All right," she said, with a tired acquiescence that frightened something inside him. "You seem to have guessed right, though. It's true. There are master firing keys for the launching sites. We have located and dismantled all but two. It's very likely that one of the two was vaporized. The other one is—lost."

"Lost?"

"I don't have to tell you about the secrecy," she said disgustedly. "You know how it developed between nation and nation. You must know that it existed between State and Union, between department and department, office and office. There were only three or four men who knew where all the keys were. Three of them were in the Pentagon when it went up. That was the third blast bomb, you know. If there was another, it could only have been Senator Vandercook, and he died three weeks ago without talking."

"An automatic radio key, hm-m-m?"

"That's right. Sergeant, must we walk? I'm so tired—"

"I'm sorry," he said impulsively. They crossed to the reviewing stand and sat on the lonely benches. "Launching racks all over, all hidden, and all armed?"

"Most of them are armed. Enough. Armed and aimed."

"Aimed where?"

"It doesn't matter."

"I think I see. What's the optimum number again?"

"About six hundred and forty; a few more or less. At least five hundred and thirty have been thrown so far. We don't know exactly."

"Who are *we?*" he asked furiously.

"Who? Who?" She laughed weakly. "I could say, 'The Government,' perhaps. If the president dies, the vice president takes over, and then the secretary of state, and so on and on. How far can you go? Pete Mawser, don't you realize yet what's happened?"

"I don't know what you mean."

"How many people do you think are left in this country?"

"I don't know. Just a few million, I guess."

"How many are here?"

"About nine hundred."

"Then as far as I know, this is the largest city left."

He leaped to his feet. *"NO!"* The syllable roared away from him, hurled itself against the dark, empty buildings, came back to him in a series of lower-case echoes: nononono . . . *no*-no— n . . .

Starr began to speak rapidly, quietly. "They're scattered all over the fields and the roads. They sit in the sun and die in the afternoon. They run in packs, they tear at each other. They pray and starve and kill themselves and die in the fires. The fires—everywhere, if anything stands, it's burning. Summer, and the leaves all down in the Berkshires, and the blue grass burnt brown; you can see the grass dying from the air, the death going out wider and wider from the bald spots. Thun-

der and roses . . . I saw roses, new ones, creeping from the smashed pots of a greenhouse. Brown petals, alive and sick, and the thorns turned back on themselves, growing into the stems, killing. Feldman died tonight."

He let her be quiet for a time. "Who is Feldman?"

"My pilot." She was talking hollowly into her hands. "He's been dying for weeks. He's been on his nerve-ends. I don't think he had any blood left. He buzzed your GHQ and made for the landing strip. He came in with the motor dead, free rotors, giro. Smashed the landing gear. He was dead, too. He killed a man in Chicago so he could steal gas. The man didn't want the gas. There was a dead girl by the pump. He didn't want us to go near. I'm not going anywhere. I'm going to stay here. I'm tired."

At last she cried.

Pete left her alone, and walked out to the center of the parade ground, looking back at the faint huddled glimmer on the bleachers. His mind flickered over the show that evening, and the way she had sung before the merciless transmitter. "Hello, you." "If we must destroy, let us stop with destroying ourselves!"

The dimming spark of humankind—what could it mean to her? How could it mean so much?

"Thunder and roses." Twisted, sick, nonsurvival roses, killing themselves with their own thorns.

"And the world was a place of light!" Blue light, flickering in the contaminated air.

The enemy. The red-topped lever. Bonze. "They pray and starve and kill themselves and die in the fires."

What creatures were these, these corrupted, violent, murdering humans? What right had they to another chance? What was in them that was good?

Starr was good. Starr was crying. Only a human being could cry like that. Starr was a human being.

Had humanity anything of Starr Anthim in it?

Starr *was* a human being.

He looked down through the darkness for his hands. No planet, no universe, is greater to a man than his own ego, his own observing self. These hands were the hands of all history, and like the hands of all men, they could by their small acts make human history or end it. Whether this power of hands was that of a billion hands, or whether it came to a focus in these two—this was suddenly unimportant to the eternities which now infolded him.

He put humanity's hands deep in his pockets and walked slowly back to the bleachers.

"Starr."

She responded with a sleepy-child, interrogative whimper.

"They'll get their chance, Starr. I won't touch the key."

She sat straight. She rose, and came to him, smiling. He could see her smile, because, very faintly in this air, her teeth fluoresced. She

put her hands on his shoulders. "Pete."

He held her very close for a moment. Her knees buckled then, and he had to carry her.

There was no one in the Officers' Club, which was the nearest building. He stumbled in, moved clawing along the wall until he found a switch. The light hurt him. He carried her to a settee and put her down gently. She did not move. One side of her face was as pale as milk.

There was blood on his hands.

He stood looking stupidly at it, wiped it on the sides of his trousers, looking dully at Starr. There was blood on her shirt.

The echo of no's came back to him from the far walls of the big room before he knew he had spoken. Starr wouldn't do this. She couldn't!

A doctor. But there was no doctor. Not since Anders had hung himself. Get somebody. *Do* something.

He dropped to his knees and gently unbuttoned her shirt. Between the sturdy, unfeminine GI bra and the top of her slacks, there was blood on her side. He whipped out a clean handkerchief and began to wipe it away. There was no wound, no puncture. But abruptly there was blood again. He blotted it carefully. And again there was blood.

It was like trying to dry a piece of ice with a towel.

He ran to the water cooler, wrung out the bloody handkerchief and ran back to her. He bathed her face carefully, the pale right side, the flushed left side. The handkerchief reddened again, this time with cosmetics, and then her face was pale all over, with great blue shadows under the eyes. While he watched, blood appeared on her left cheek.

There must be *somebody*— He fled to the door.

"Pete!"

Running, turning at the sound of her voice, he hit the doorpost stunningly, caromed off, flailed for his balance, and then was back at her side. "Starr! Hang on, now! I'll get a doctor as quick as—"

Her hand strayed over her left cheek. "You found out. Nobody else knew, but Feldman. It got hard to cover properly." Her hand went up to her hair.

"Starr, I'll get a—"

"Pete, darling, promise me something?"

"Why, sure; certainly, Starr."

"Don't disturb my hair. It isn't —all mine, you see." She sounded like a seven-year-old, playing a game. "It all came out on this side, you see? I don't want you to see me that way."

He was on his knees beside her again. "What is it? What happened to you?" he asked hoarsely.

"Philadelphia," she murmured. "Right at the beginning. The mushroom went up a half-mile away. The studio caved in. I came to the next day. I didn't know I was burned, then. It didn't show. My left side. It doesn't

matter, Pete. It doesn't hurt at all, now."

He sprang to his feet again. "I'm going for a doctor."

"Don't go away. Please don't go away and leave me. Please don't." There were tears in her eyes. "Wait just a little while. Not very long, Pete."

He sank to his knees again. She gathered both his hands in hers and held them tightly. She smiled happily. "You're good, Pete. You're so good."

(She couldn't hear the blood in his ears, the roar of the whirlpool of hate and fear and anguish that spun inside him.)

She talked to him in a low voice, and then in whispers. Sometimes he hated himself because he couldn't quite follow her. She talked about school, and her first audition. "I was so scared that I got a vibrato in my voice. I'd never had one before. I always let myself get a little scared when I sing now. It's easy." There was something about a windowbox when she was four years old. "Two real live tulips and a pitcher-plant. I used to be sorry for the flies."

There was a long period of silence after that, during which his muscles throbbed with cramp and stiffness, and gradually became numb. He must have dozed; he awoke with a violent start, feeling her fingers on his face. She was propped up on one elbow. She said clearly, "I just wanted to tell you, darling. Let me go first, and get everything ready for you. It's going to be wonderful. I'll fix you a special tossed salad. I'll make you a steamed chocolate pudding and keep it hot for you."

Too muddled to understand what she was saying, he smiled and pressed her back on the settee. She took his hands again.

The next time he awoke it was broad daylight, and she was dead.

Sonny Weisefreund was sitting on his cot when he got back to the barracks. He handed over the recording he had picked up from the parade ground on the way back. "Dew on it. Dry it off. Good boy," he croaked, and fell face downward on the cot Bonze had used.

Sonny stared at him. "Pete! Where've you been? What happened? Are you all right?"

Pete shifted a little and grunted. Sonny shrugged and took the audiovid disk out of its wet envelope. Moisture would not harm it particularly, though it could not be played while wet. It was made of a fine spiral of plastic, insulated between laminations. Electrostatic pickups above and below the turntable would fluctuate with changes in the dielectric constant which had been impressed by the recording, and these changes were amplified for the scanners. The audio was a conventional hill-and-dale needle. Sonny began to wipe it down carefully.

Pete fought upward out of a vast, green-lit place full of flickering cold fires. Starr was calling him. Something was punching him, too. He fought it weakly, trying to hear what she was saying. But someone else was jabbering too loud for him to hear.

He opened his eyes. Sonny was shaking him, his round face pink with excitement. The audiovid was running. Starr was talking. Sonny got up impatiently and turned down the audio gain. "Pete! Pete! Wake up, will you? I got to tell you something. Listen to me! Wake up, will yuh?"

"Huh?"

"That's better. Now listen. I've just been listening to Starr Anthim—"

"She's dead," said Pete. Sonny didn't hear. He went on, explosively, "I've figured it out. Starr was sent out here, and all over, to *beg* someone not to fire any more atom bombs. If the government was sure they wouldn't strike back, they wouldn't have taken the trouble. Somewhere, Pete, there's some way to launch bombs at those murdering cowards—and I've got a pret-ty shrewd idea of how to do it."

Pete strained groggily toward the faint sound of Starr's voice. Sonny talked on. "Now, s'posing there was a master radio key—an automatic code device something like the alarm signal they have on ships, that rings a bell on any ship within radio range when the operator sends four long dashes. Suppose there's an automatic code machine to launch bombs, with repeaters, maybe, buried all over the country. What would it be? Just a little lever to pull; thass all. How would the thing be hidden? In the middle of a lot of other equipment, that's where; in some place where you'd expect to find crazy-looking secret stuff. Like an experiment station. Like right here. You beginning to get the idea?"

"Shut up. I can't hear her."

"The hell with her! You can hear her some other time. You didn't hear a thing I said!"

"She's dead."

"Yeah. Well, I figure I'll pull that handle. What can I lose? It'll give those murderin' . . . *what?*"

"She's dead."

"Dead? Starr Anthim?" His young face twisted, Sonny sank down to the cot. "You're half asleep. You don't know what you're saying."

"She's dead," Pete said hoarsely. "She got burned by one of the first bombs. I was with her when she . . . she— Shut up, now, and get out of here and let me listen!" he bellowed hoarsely.

Sonny stood up slowly. "They killed her, too. They killed her. That does it. That just fixes it up." His face was white. He went out.

Pete got up. His legs weren't working right. He almost fell. He brought up against the console with a crash, his outflung arm sending the pickup skittering across the record. He put it on again and turned up the gain, then lay down to listen.

His head was all mixed up. Sonny talked too much. Bomb launchers, automatic code machines—

"You gave me your heart," sang Starr. *"You gave me your heart. You gave me your heart. You—"*

Pete heaved himself up again and moved the pickup arm. Anger, not at himself, but at Sonny for causing him to cut the disk that way, welled up.

Starr was talking, stupidly, her face going through the same expression over and over again. *"Struck from the east and from the Struck from the east and from the—"*

He got up again wearily and moved the pickup.

"You gave me your heart. You gave me—"

Pete made an agonized sound that was not a word at all, bent, lifted, and sent the console crashing over. In the bludgeoning silence he said, "I did, too."

Then, "Sonny." He waited.

"Sonny!"

His eyes went wide then, and he cursed and bolted for the corridor.

The panel was closed when he reached it. He kicked at it. It flew open, discovering darkness.

"Hey!" bellowed Sonny. "Shut it! You turned off the lights!"

Pete shut it behind him. The lights blazed.

"Pete! What's the matter?"

"Nothing's the matter, Son," croaked Pete.

"What are you looking at?" said Sonny uneasily.

"I'm sorry," said Pete as gently as he could. "I just wanted to find something out, is all. Did you tell anyone else about this?" He pointed to the lever.

"Why no. I only just figured it out while you were sleeping, just now."

Pete looked around carefully. while Sonny shifted his weight. Pete moved toward a tool rack. "Something you haven't noticed yet, Sonny," he said softly, and pointed. "Up there, on the wall behind you. High up. See?"

Sonny turned. In one fluid movement Pete plucked off a fourteen-inch box wrench and hit Sonny with it as hard as he could.

Afterward he went to work systematically on the power supplies. He pulled the plugs on the gas engines and cracked their cylinders with a maul. He knocked off the tubing of the Diesel starters —the tanks let go explosively—and he cut all the cables with bolt cutters. Then he broke up the relay rack and its lever. When he was quite finished, he put away his tools and bent and stroked Sonny's tousled hair.

He went out and closed the partition carefully. It certainly was a wonderful piece of camouflage. He sat down heavily on a workbench nearby.

"You'll have your chance," he said into the far future. "And by Heaven, you'd better make good."

After that he just waited.

THE END.

IN TIMES TO COME

Very short of space this issue! Alejandro has a new—and new type—cover for Simak's "Aesop", the latest of the City series, on the December number. Van Vogt's "Barbarian" is a new "Gods" novelette—on a new tack completely!

THE EDITOR.

STUCK IN THE MUD

BY J. J. COUPLING

An electronics expert makes some suggestions on how electronic methods might be applied to astronomical work. The problem is not, basically, a need for more light—but for less blurred light. And electronics may help there!

There's nothing gives one such satisfaction as helping someone else with his problems—that is, if it's really help one gives. Ever since I read R. S. Richardson's "Postwar Plan for Mars" in Astounding Science Fiction for January 1944 I've felt that the problem of photographing the canals of Mars provides an excellent opportunity. Of course, as Dr. Richardson pointed out, astronomers don't seem to be very interested in Mars. Too, it looks as if man will come unstuck from his terrestrial mud very soon, and out in space the disk of a planet will not be "in continual agitation like a basin of mercury." Instead, it will shine on, bright and steady, while the Earth-free astronomer photographs it with any magnification and any length of exposure he may chose. Or, a bit later, he may set foot on the planet and map the canals—if there truly are any—with level, tape and transit.

Still, suppose something *did* come along which would help in obtaining photographic evidence of the canals right here from Earth. After all, we don't know just when astronomers will be able to do their observing from space instead of from mountaintops. If they were given a helpful idea right now, perhaps some of the usually apathetic members of the tribe would give it a whirl. And, perhaps there is more interest now. I understand one observer is seeing the canals green instead of the traditional gray.

Just what sort of help could the astronomers receive from those outside of their profession? An obvious thought, of course, is help

from new electronic gadgets. Particularly, one potentially helpful gadget has made its appearance since the date of Dr. Richardson's article; that is the image orthicon, and it will appear in this story later on. There is another field where help might be found, however. That is statistical methods or probability theory, the part of mathematics which can be used in sorting the facts out of large bodies of data.

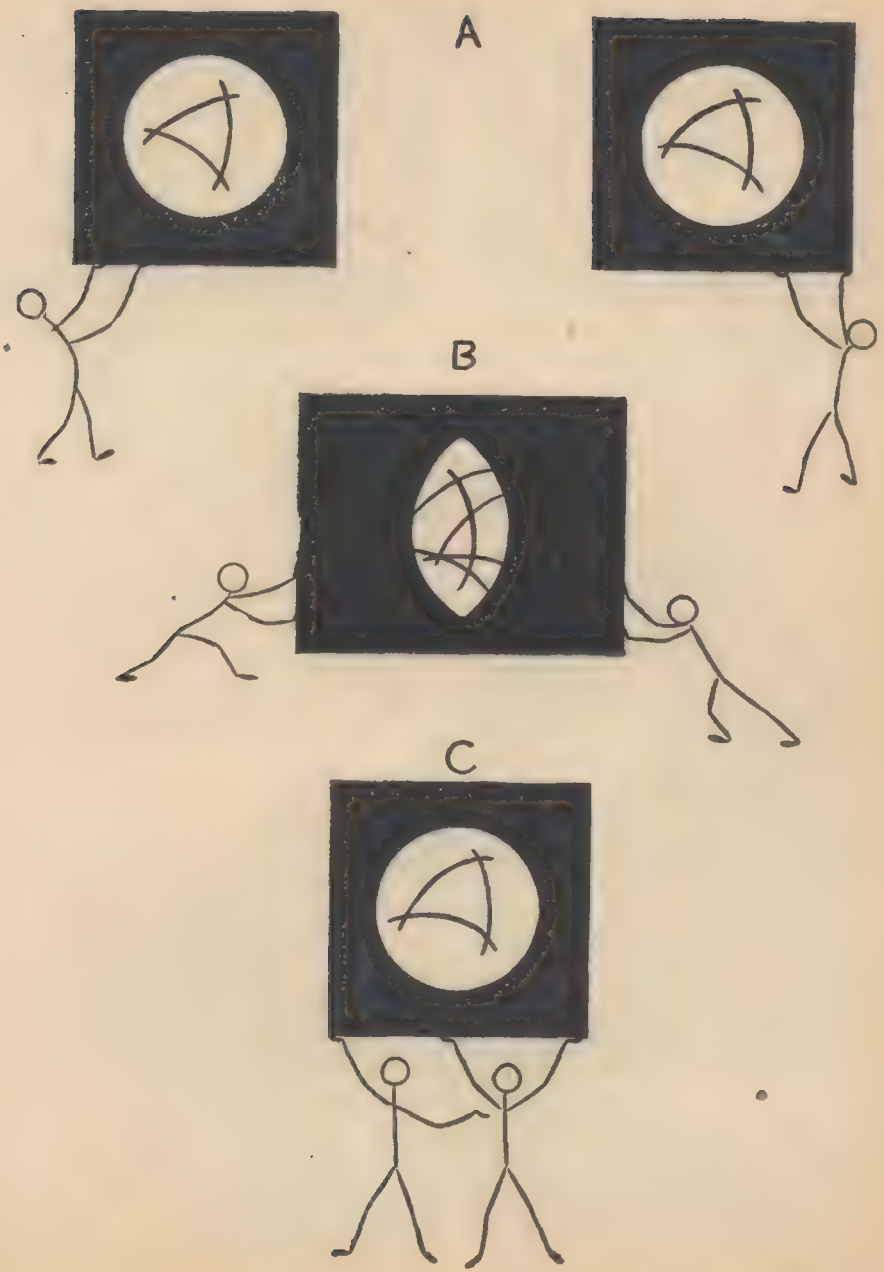
The use of the laws of probability in transcending the limitations of observing instruments is no new thing. In surveying, in making very accurate triangulations, the same angle may be measured several thousand times instead of just once. If the measurements are made properly, the average of these many observations can be accurate to an amount much less than the smallest reading which can be made on the scale of the theodolite. Thus, a difference in angular setting which certainly cannot be apparent to the eye in any one observation becomes established beyond question through combining the results of many observations.

A single photograph of Mars is a very unsatisfactory thing. For reasons which will become apparent later, the image must be small if the photograph is to be taken with a short exposure. Elusive hints of detail, tantalizing one in the unmagnified photograph, dissolve into a meaningless spottiness of silver grains when the image is viewed more closely. Some supplement to good judgment is needed in making up one's mind as to what is really there and what is merely imagined. And, of course, one needs several photographs as a check.

Historically, a first step was taken a few years ago by some South African astronomers. They took a number of photographs of Mars in rapid succession. Then, they selected the photographs which looked clearest and printed them superposed on a single plate. The resulting print showed improved detail, but it didn't settle the canal question. These astronomers were the true pioneers, though, their method was fundamentally sound. It was, however, very crude. Suppose we consider the matter in detail.

First of all, we need many, many photographs if we are to get the most out of an averaging process. In general, the gain in detail will go as the square root of the number of things averaged. Thus, averaging 4 observations leads to a 2 to 1 gain, averaging 16 leads to a 4 to 1 gain, or averaging 1,600 leads to a

Figure 1: When two photographs of Mars are made to overlap, most light will be transmitted when the disks coincide. If there is fine detail, such as narrow dark lines, there will be a sudden rise in transmitted light just when the photographs coincide, because dark lines of one are hidden by dark lines of the other.


A
B
C

40 to 1 gain. It is dangerous to push this too far, but it will certainly be worth while to carry out some sort of averaging process over a good many photographs.

That means taking many more photographs, however, for the idea of selection is very important. The goodness of seeing, that is, the degree of atmospheric disturbance, varies from second to second. Astronomers, who observe planets visually, are forced to disregard the blurred image they see at moments of bad seeing and concentrate on the clearer image of moments of good seeing. In the same way, we should try to get the detail in the photographs taken at moments of good seeing, and discard the photographs taken when the seeing is bad. Thus, to get, say, several hundred photographs suitable for use in "averaging" it may be necessary to take several thousand or several tens of thousands.

Of course, this might be avoided if we took photographs only when the seeing is good. This is a wicked and a dangerous doctrine. The real test of good seeing must be how much one sees. Thus, the real test of photography must be how much one photographs. One may choose to take photographs during a night, or during an hour of the night, when the atmospheric conditions are obviously superior, as determined by visual observation, for instance. Once photography is started, however, the most objective test of seeing is obviously the quality of the photographs themselves, and the soundest approach would be to take them one after another, motion-picture fashion, and judge the moment-to-moment seeing by examining the photographs afterward.

This brings up the question of exposure time, and the rate of taking photographs. It would be best to make the exposures as short as possible, so that seeing didn't change from good to bad during the time one photograph was being taken. Obviously, if we make the exposure time too short, we'll get no photograph, and that's a matter which will come up later. Fortunately, we have a guide. The eye sees canals (?), and the eye doesn't follow fluctuations occurring in shorter periods than about a tenth of a second. Hence, if ten photographs were taken a second we should be in a position to do about as well as the eye.

Taking photographs at least ten a second has another advantage as well. Mars rotates, and only the photographs taken over a brief interval of time can be easily combined. If we set a minute as a reasonable period—a somewhat longer period might be allowable—we see that at ten photographs a second we'll have six hundred in a minute. If we took photographs on five different nights, we could get three thousand photographs for a comparable view of the planet. Now, perhaps the three thousand for one particular position of rotation would be bad. Suppose, however, the planet were photographed for an hour each night. As there are sixty minutes in an hour, in the

end we would have sixty sets, each containing three thousand photographs of a comparable rotational position of the planet, and the chances don't seem too bad that there might be several hundred good photographs, suitable for averaging, in one of these sets.

We have got as far, then, as sixty sets of photographs each containing three thousand photographs —180,000 photographs in all. How should photographs be selected within a set? The South African astronomers merely examined their few photographs and chose those which looked clear. In the first place, examining 180,000 photographs is a frightening task. If the pictures could be adequately examined in ten seconds each, it would take over 600 eight-hour days to go through the lot. There is a worse objection than that, however. To examine the photographs in this manner would be to introduce an arbitrary human judgment, variable from day to day.

What is needed is a machine for sorting the good photographs from the bad. Oddly enough, the principles of such a machine are well-known, and can be illustrated very simply. Suppose we have two photographic plates, each exhibiting the same pattern of dark lines, as shown in Figure 1a. As these are made to overlap but not to coincide, as shown in Figure 1b, each line separately intercepts part of the light passing through the photographs, except for the very small areas where the lines cross. However, when the photographs coincide, as shown in Figure 1c, the lines of the patterns hide behind one another, and the amount of light intercepted is reduced.

Suppose, for instance, we plotted the amount of light transmitted through the two photographs vs. their relative position, as shown in Figure 2. As the disks begin to overlap, the transmitted light will gradually rise, and for very sharp disks the curve will become almost a straight slope when the disks nearly coincide. Then, if the two photographs have fine detail which is the same or very nearly the same, there will be a sudden change in the transmitted light when the images just coincide. For fine detail consisting of dark lines, as shown in Figure 1, it is obvious that this will be a sharp rise in transmitted light, as shown in Figure 2. As the photographs slide past coincidence, the light will fall again in much the same manner as it rose. If a photograph having very little detail—one taken during bad seeing—were slid past a good photograph, the pattern would be much as in Figure 2, but the small spike or pip at coincidence of the lines, representing fine detail, would be missing. Indeed, if the edges of the disk in the fuzzy photograph were indistinct, the curve would have a rounded top instead, as indicated by the dashed line in Figure 2.

We can easily imagine a device which would slide one photograph past another and record the light intensity by means of a photocell.

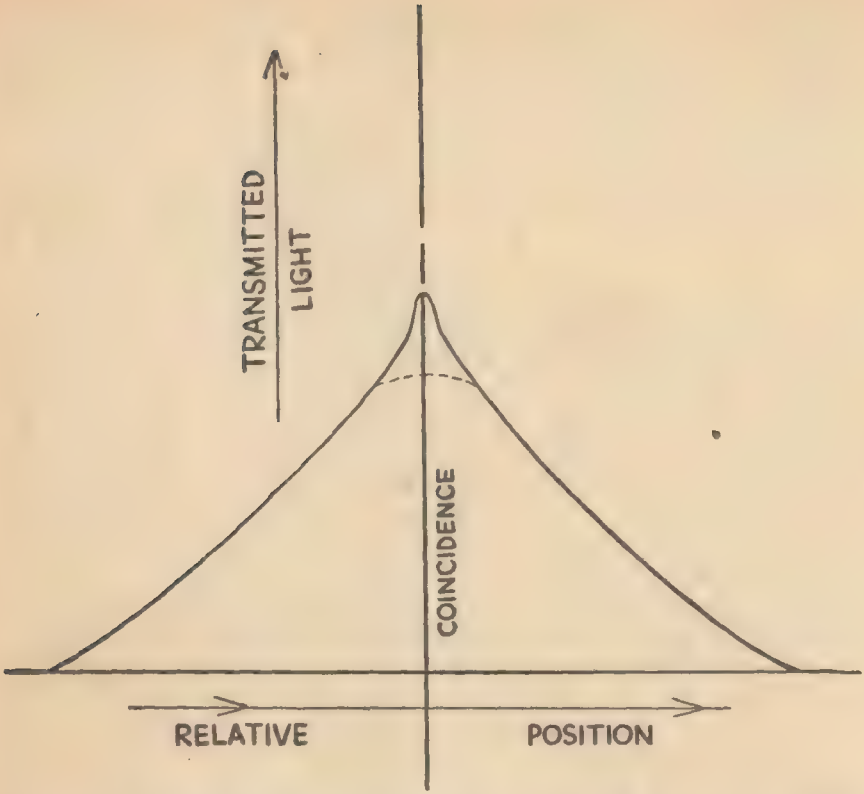


Figure 2: If we plot transmitted light vs. position as two photographs of Mars are slid past one another, the light will rise until the disks coincide, and then fall. If there is fine detail, there will be a sudden rise just as the photographs coincide (solid line). If one is blurred, the top of the curve will be rounded (dashed line).

Whether or not the photographs had much detail in common could be determined in several ways. If the signal from the photocell were passed through an electrical circuit which would respond to rapid changes in current only, the presence of a pip might be so detected. Or, a comparison might be made between the amount of light transmitted by each photograph separately and the maximum amount transmitted as the two were slid past one another. If two photographs each transmit a standard amount of light, the two together will transmit more light if they are alike than if they are unlike.

Thus, we have the general principles for making a machine which

will compare two photographs of Mars and produce a meter reading or a signal of some sort telling how alike the photographs are. There'd probably be plenty of slips in making such a machine, but at least there's a path to follow. The machine would, of course, have to be pretty fast, for to be perfectly objective it should compare every photograph in each group of three thousand with every other photograph in the group. This means 4,495,501 comparisons per group. Allowing the machine to run twenty-four hours a day and to make ten comparisons a second, it should run off a group in five days, or the sixty groups in a little less than a year. This isn't so much faster than judging the photographs individually by eye, but it should be more reliable. Too, the machine wouldn't get fed up with the task.

What would the machine tell us about the photographs? From each comparison we would get a reading telling a degree of likeness. In the end, we would find that some photographs in a group were very much like many other photographs. These would be the good photographs. Other photographs would not bear as strong a resemblance to any other photograph, and would be like only a few—by accident. Such photographs might have detail, and might conceivably appear "good" to the eye, but the comparisons would say that such detail was false and misleading, produced by accident or distortion and not representing what we want to see, the fixed aspect of the canals of Mars.

Of course, one set of comparisons would represent a tremendous body of data, and some special recording and tabulating means would have to be used. This undertaking is certainly a gadgeteer's happy dream! Perhaps each degree of likeness beyond a certain lower limit could be entered on a microfilm space alloted to each photograph, or perhaps on the margin of the photograph itself. Maybe, though, to worry about such matters is trivial when we are faced with the thought of making some quarter of a billion comparisons.

Finally, of course, our tabulating machine must select a set of photographs from each group—perhaps one hundred or five hundred from the total of three thousand. Here we near the end of our course. It is necessary merely to make one print per group, allotting a small part of the exposure to each of the selected photographs, in turn, and, there it is, the ultimate achievement of planetary photography, a composite of good seeing conditions, a picture without grain, and showing, we trust, double, single or however else they may be, the Martian canals.

At this point I received a kind suggestion that I was deceiving myself. Suppose we had several hundred high-quality images, obtained by the sorting process. Would it be possible to superpose and print them so that the detail would add up? If all of our negatives showed "infinitely" narrow

lines, that is, if they were all perfect to begin with, and we tried to print them superposed using machinery which didn't quite line them up, the print would certainly be worse than the negatives and we might, in fact, end up with very little detail in the print.

Thus, we conclude that the gain to be achieved by multiple printing of selected negatives is influenced by the goodness of the printing means. For small numbers of negatives the gain will go as the square root of the number, as we have indicated, but for large numbers the finest detail which can be achieved may well be limited instead by the error in superposing the negatives during printing. This error can be of two sorts.

Suppose the photographs are taken on a movie film. What if the image is not in the same position with reference to the sprocket holes in each frame? The planet might drift in the field of the telescope, for instance. Or, atmospheric disturbances might shift the image bodily rather than confusing it. This is the worst sort of thing that could happen. A drastic remedy would be to shift the image in both directions during comparison and mark the negative at coincidence. If we were driven to this, the gain through superposing selected prints would probably be rather limited.

Let us be optimists, however, and assume that the telescope can be kept accurately trained in the direction of the planet. Suppose atmospheric disturbances do shift the image bodily in some cases? We can use our sorting process to reject photographs in which the image is shifted. In this case, we are limited by the mechanical accuracy of projecting successive movie frames in the same position.

This makes matters very definite. The S.M.P.E. even has standards covering this, and I believe the maximum allowable *weave* and *jump* are 1/300 of the frame width. The round image of a planet could not occupy the full width of a frame which is wider than it is high, but still by *standard projection methods* the images could be lined up to better than one part in two hundred. Should we be encouraged or discouraged?

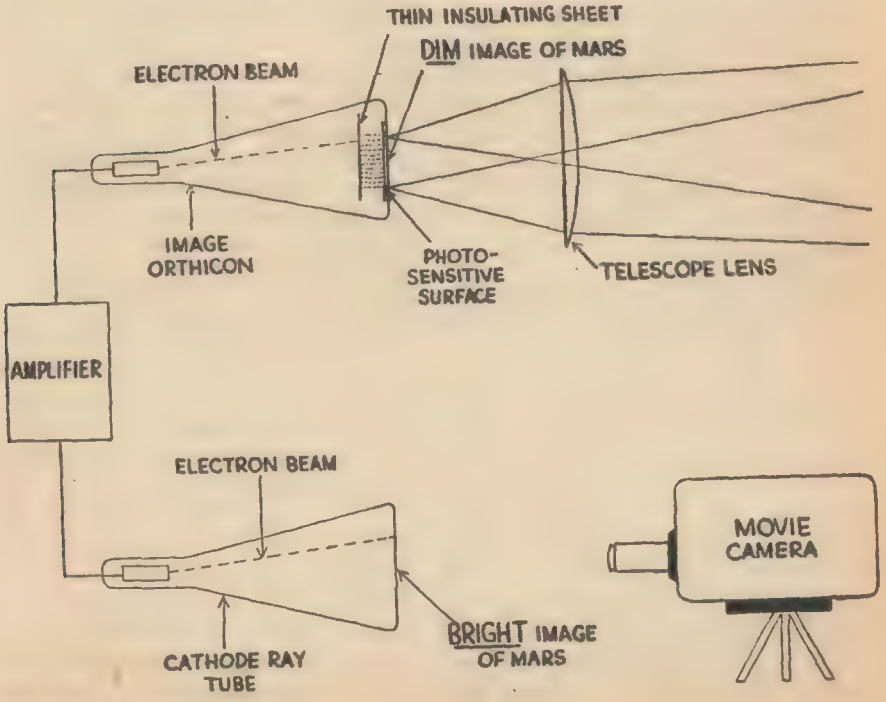
As it turns out, we don't need to worry too much about this figure. Careful measurements in a large New York motion picture house showed that for an exceptionally good film the maximum jump and weave were only ¼ inch in 20 feet, that is, one part in 960, while other films were two or three times this bad. A maximum displacement of 1/960 of the width would provide a very high quality print. Certainly, it should be possible to do as well as in even the best commercial film, and thus we have a good chance of superposing our various negatives with the required accuracy.

Are we in the clear, then? It would seem to take only money, ingenuity, and time to do all this for astronomy. Or, have we overlooked something? There are, of course, the million photographs, each taken in a tenth of a second. Now, the bane of astronomy is the lack

of light. The eye is much more sensitive than a photographic plate. There is, however, something almost as sensitive as the eye, and that is a new television pickup tube, the image orthicon. As soon as I heard of the image orthicon I thought of photographing Mars, and I finally set out to make some caluculations concerning its use for this purpose.

Just what is the image orthicon and how could it be used in getting photographs of Mars? The device was described more completely in Astounding in "Less Light Please," and this isn't the place to explore its inner secrets in detail. You can, however, get a rough idea of how it works by following the diagram in Figure 3. The explanation which

Figure 3: The image orthicon can be used to improve the brightness *but not the* sharpness *of an image of Mars. Light from Mars produces electrons, and the electron beam in the orthicon collects these. Their charge is amplified and controls the intensity of a television-type cathode-ray tube. As the electron beam in the image orthicon sweeps over the surface—scanning it—the beam of the cathode-ray tube sweeps over the fluorescent surface, tracing out a much brighter and larger—but not more detailed—image.*



I give is true in spirit if not literally correct in every detail.

Let us imagine we are using the image orthicon in photographing Mars. We focus the image of the planet on a trafisparent photosensitive surface at one end of the tube. The light falling on each little area of the surface now causes electrons to leave at a rate proportional to the amount of light falling on that little area per second.

The electrons leaving the little area are focused on another little area of a thin insulating film or sheet a little behind the photosensitive surface. The purpose of this insulating sheet is to store the electrons until they are needed.

The insulating sheet is scanned by an electron beam. This sweeps over it from left to right at the top, then quickly back and again across a little lower, and again a little lower still, until the whole surface has been scanned. If we are to take a picture each tenth of a second, then the sheet will be scanned completely ten times a second.

The purpose of the scanning beam is to pick off the electrons which have been stored on the insulating sheet, and which represent the light which has fallen on the photosensitive surface since the last scan. As a little area of the insulating film is scanned by the electron beam, a charge of electrons proportional to the brightness of that part of the image is picked off. The current formed by these is used as the input of an amplifier, and the output of this amplifier controls the intensity of the electron beam of a cathode ray tube such as is used in a television receiver.

The electron beam in the cathode-ray tube is swept back and forth, and down, over the screen of the tube in synchronism with the sweeping of the electron beam in the image orthicon. Thus, if the beam in the image orthicon picks up many electrons from a small area, corresponding to a bright spot on the image of the planet, the beam of the cathode-ray tube, which is falling on a corresponding area, is intense and causes a bright glow on the fluorescent screen of the tube. So, point by point, once each tenth of a second, the spot of the cathode-ray tube will faithfully trace out the details of the image of Mars which falls on the photosensitive surface of the image orthicon.

The image on the cathode-ray tube screen won't show any more detail than the image on the screen of the image orthicon, but it can be much brighter. It can, in fact, be just as bright as we wish, for the brightness is controlled by the gain of the amplifier and the beam current and voltage of the cathode-ray tube, and not by the amount of light falling on the image orthicon. Thus, with the setup shown in Figure 3 there is no question at all of getting enough brightness on the screen of the cathode-ray tube so that we can photograph it every tenth of a second.

Whether or not the system will work depends not on being able to photograph the image on the screen of the cathode-ray tube, but

on the quality of that image. In television, one aspect of quality is the number of lines which go to make up the picture. After looking at photographs of Mars, I would guess that a hundred lines would represent a big advance in quality. For a square picture, hundred-line quality means that, effectively, the picture is divided up into 100x100 or 10,000 little squares, and all we know about the picture is the brightness of these little squares. Thus, if we choose to scan the image with a hundred lines and to be content with hundred-line quality, we have introduced an appreciable graininess into the picture. This, however, isn't the whole story of how good the picture will be.

All the information we have about the brightness of each of the 10,000 little areas of the picture is the number of electrons which leave a little area of the photosensitive surface of the image orthicon in one tenth of a second. If this is a large number, well and good. But, suppose it is only one electron on the average? At best we might think of getting no electrons from a dark area, one from a medium area, and two from a bright area. That's pretty poor gradation of tone. However, even worse, one would sometimes get an electron from a pretty dark area, no electron from a medium area, and perhaps only one from a bright area, for there is a randomness in the emission of electrons. Under such conditions, the image on the screen of the cathode-ray tube would still be bright enough, but it would be uneven and "noisy." The brightness of an area on the photosensitive surface of the image-orthicon tube would not be faithfully reproduced on the screen of the cathode-ray tube, but only roughly in large steps, and erratically as well.

The big question as to whether the image on the screen of the cathode-ray tube will be good and useful then boils down to the question, how many electrons will be released in a tenth of a second by the part of the light of the image of Mars which falls on a little square of the photosensitive surface of the image orthicon, a little square area 1/100 the height of the image by 1/100 the width of the image? This isn't hard to discover, approximately, at least.

My copy of the Rubber Handbook doesn't tell how bright Mars is, but it does say that the surface of the moon emits .4 lumens per square centimeter, or about 2 lumens per square inch. Now, Mars is about 1.5 times as far from the Sun as the Moon is. Light intensity falls off as the square of the distance so it seems reasonable to say that the brightness of Mars is 2 divided by 1.5 squared, or about .85 lumens per square inch.

If we use a mirror or a lens to form an image of an object, the light intensity in the image is given roughly by the light intensity of the object divided by twice the f number squared. The f number is the ratio of the focal length of the lens to the lens diameter. Thus, for an f/10 lens, the light intensity in the image of Mars would be .85

divided by 20 squared (400), and that is .0021 lumens per square inch.

Figure 4 shows a telescope lens forming an image of the planet Mars. First of all, how wide is the image? The width of the image, w, is to the focal length, F, as the actual diameter of Mars, 4,320 miles, is to the distance from the Earth to Mars, which can be taken roughly as 43,320,000 miles under fairly favorable circumstances. If we measure the focal length F in inches, we easily see that the width of the image in inches will be w= F÷10,000. In other words, the width of the image will be a ten-thousandth of the focal length of the lens. F doesn't need to be the real focal length of the main lens of the telescope, however, for by tricky optical systems the lens can be made to act as if it had almost any focal length.

What we want is to find the amount of light falling on an area 1/100 as high as w and 1/100 as wide as w. We have the light per square inch as .85 divided by the ratio of 2F to d, squared. We have found that w is a ten thousandth of F, so that 1/100 of w is a millionth of F. Thus, we find that the amount of light measured in lumens falling on the little area will be the lens diameter d—in inches squared divided by about five million million —5,000,000,000,000. This certainly doesn't sound like much light.

How many electrons does this light release from the little area in a tenth of a second? The RCA people say that the photosensitive surface of the image orthicon gives about 20 millionths of an ampere per lumen. The charge on the electron is very small, however, and one millionth of an ampere means a flow of 16,000,000,000,000 electrons a second. Thus, if one lumen gives 20 millionths of an ampere per second, this is 320,000,000,000 electrons a second or 32,000,000,000,000 electrons in a tenth of a second.

Here is the payoff. Looking back a paragraph we see this means that from each little area of the image, 1/100 of the image high by 1/100 of the image wide, we will get during each tenth of a second about 6 electrons for a lens diameter of 1 inch, 600 for a lens diameter of 10 inches, and 60,000 for a lens diameter of 100 inches!

Six electrons isn't very many to work with, especially since we realize that the image orthicon isn't exactly perfect. Six hundred is, however, a considerable number, and 60,000, the number we should get using the 100-inch telescope at Mount Wilson, is a lot. There doesn't seem to be much room for doubt; the image orthicon would produce a good hundred-line image of Mars, scanning ten times a second, if we used a moderately large telescope. Here, then, seems to be the solution. To get good pictures of Mars at approximately movie speed we need merely set up the image orthicon at the focus of a fairly large telescope, amplify the signal, reproduce it on the screen of a cathode-ray tube, television fashion, and photograph it with a

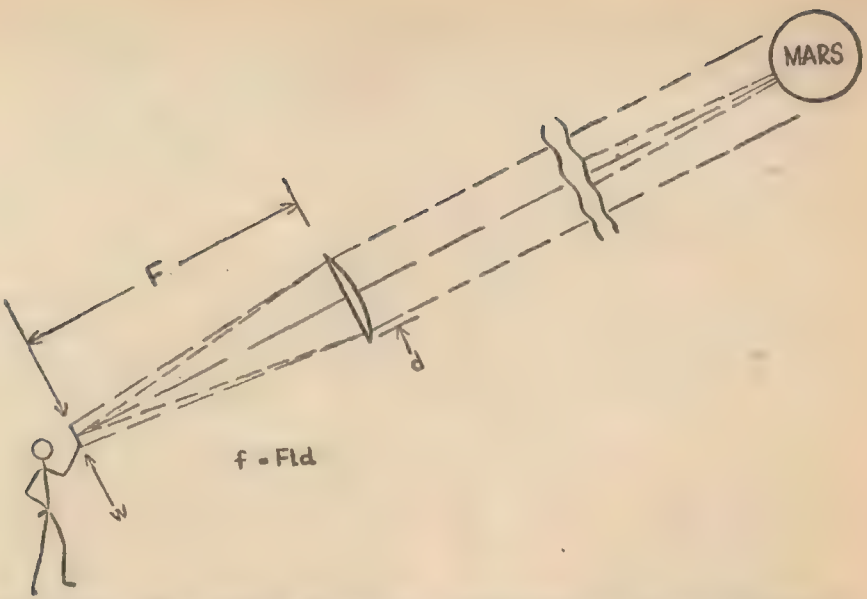


Figure 4. The width of an image of Mars, w, is about 1/10,000 the focal length F of the telescope lens producing it. The f number of the lens is the focal length divided by the lens diameter d. When the f number is small—large lens diameter—the image is brighter.

movie camera. So, it really is possible to get the many photographs we need to reveal through statistical methods the canals—or absence of canals!—on Mars. It may require a lot of work, a lot of gadgeteering, and considerable money. Would it be worth it? That, I suppose, is up to whoever has the money.

At about this point, it occurred to me that 60,000 electrons per picture element every tenth of a second is quite a few electrons, and, whatever the light that produces them may sound like measured in lumens, it must be a good deal of light in some terms. I got a little suspicious. Do we need the image orthicon after all? My first reaction was, of course, this: if astronomers could take good movies of Mars by ordinary photographic means, they'd have done so long ago. Still, the question was worth looking into. So, I wrote the Eastman Kodak Company and they sent me a nice handbook, telling just what photographic film can do.

The first thing to do was to pick out a good film. It might seem obvious that one should use the "fastest" film, that is, the film for which the recommended exposure is shortest. This is not necessarily so, however. We have decided that the image of Mars on the film should have hundred-line resolution at least. Now, films have what is

called resolving power. For instance, Super Panchro-Press, Sports Type, the fastest film listed, has a resolving power of only 40 lines a millimeter. That means, only 40 distinct lines can show up in a millimeter of the image; if one tries to photograph something which has finer detail he will get merely an indistinct blur. Contrast Process Ortho, however, had a resolving power of 125 lines a millimeter. Generally, the faster films have less resolving power than the slower films.

Suppose, now, that we require our image of Mars to have a certain detail. If we use a film with high resolving power, we need only a small image. Thus, the light collected by the telescope lens can be concentrated in a small area. However, with a film of lower resolving power the image must be larger to contain the same detail, the light must be spread over a larger area, and a longer exposure is needed *unless* the film is fast enough to make up for the difference.

If film A has twice the resolving power of film B, the area of the image on film A need be only ¼ the area of the image on film B, and the light intensity on film A will be 4 times as bright as that on film B. Thus, we see that the goodness of a film for photographing Mars is the film *exposure index*, a number inversely proportional to the required exposure at a given aperture, and the square of the resolving power measured, say, in lines per millimeter. The table below shows speed and resolving power for several films, and also the goodness as defined above relative to the goodness for the commonly used Verichrome,

Film	Exposure Index	Resolving Power	Goodness
Verichrome	50	45	1.0
Plus-X	50	55	1.5
Super-XX	100	45	2.0
Super Panchro-Press, Sports Type	250	40	4.0
Contrast Process Ortho	3 (est. from curve)	125	.5

We see that the fastest film, Super Panchro-Press, Sports Type, does turn out to be the best, after all, so we'd have made no mistake in picking it in the first place. Just how good is this most suitable film for photographing Mars? The book gives an exposure guide for Verichrome. Mars seems to qualify as a bright subject in a bright sun. We want to photograph it clouds and all, and there are certainly no clouds between it—including its atmosphere—and the Sun. For this, the recommended exposure is 1/50 second at f/16. As our chosen film is 5 times as fast as Verichrome, we should require only 1/250 second at f/16. Wait a minute, though; Mars is 1.5 times as far from the Sun as we are, and that brings the exposure up by a factor of 1.5 squared, or 2.25, making it 1/110 at f/16. Now, the required exposure time varies inversely as the square of the f number, so we see that for an exposure of 1/10 second we can work at f/53.

A little while ago we decided that the size of the image of Mars will be the focal length of the lens, F, divided by 10,000. The film we have chosen gives a resolving power of 40 lines a millimeter, or about 1,000 lines an inch. Thus, the resolution in the image measured in lines will be the focal length F divided by 10. We also remember that the f number is the focal length of the lens divided by the lens diameter d. As we will work at f/53, F will be 53 times d, and for a lens diameter of 1 inch the resolution will be 5.3 lines. Here, then, is the score:

Diameter of Telescope Lens (inches)	Resolution (lines)
1	5.3
10	53
20	*106*
50	*265*
100	530
200	1,060

When I looked at these figures, they simply floored me. I've heard of various photographic tricks which astronomers use—sensitizing solutions and pre-exposure. This table seems to say, however, that without tricks, with a standard film, using recommended exposure, one can get hundred-line photographs of Mars in 1/10 of a second with anything larger than a 20-inch telescope. The 100-inch telescope at Mount Wilson would give pictures of ideal television quality—a lot of television is much worse than the limitation imposed by the 535 lines—and the 200-inch Palomar telescope should give definition far beyond anything available in television. This is just the limitation imposed by the photographic film, of course; the atmospheric unsteadiness will still have to be overcome by taking many many pictures, sorting them, and combining them properly.

Things look pretty rosy on all sides. There is every reason to expect that even while we remain Earthbound we can get a much clearer idea of the surface markings of Mars. By taking many pictures, sorting out the good ones, and printing them all on one plate, we can make the fixed detail show up while averaging out the changing effects of atmospheric disturbance. The problems of sorting the good pictures from the bad is considerable, but it is pretty clear how a machine can be made to do this. The pictures should be taken with a short exposure, perhaps a tenth of a second, so that we don't get bad seeing into a picture along with good seeing. Electronics, and especially the image orthicon, could help us in getting plenty of exposure with the necessary detail. But, apparently, one can take such pictures directly with present telescopes on standard film! What are we waiting for? Dr, Richardson cited the apathy of astronomers toward the planets in "Postwar Plan for Mars." Surely, though, the astronomers would be excited to get a fine clear view of Mars from space. But, they don't have to wait for that! From all the evidence, it looks as if they could get a fine view from right here, with a little time and ingenuity.

THE END.

BY ERIC TINDE

BOOMERANG

The silent, deadly and unending struggle of plant-vs-plant for a place in the sun seems of little interest to men generally. But it can be made a most efficient weapon for a non-human race!

Illustrated by Cartier

The intention had come to Sarlath kar Majon earlier. Now, as he sat in his audience room, listening to his admiral speak, he thought he saw the means to implement his decision. Admiral Kulon was reporting on the recent expedition which had just returned from reconnoitering the planet called Earth.

"We have every reason," concluded the admiral, "to believe that we were unobserved by any of the dominant species of the planet, excepting, of course, the specimen we brought back with us and which, like the rest of our few specimens of the planet's animal life, died on the way, unable to eat the food we supplied it."

Sarlath interrupted. "Couldn't you feed the planteaters among them on some of their own plants?"

"Unfortunately, most of the plant specimens died quite soon, too. We had filled our containers with soil from the third planet and trans-

planted the specimens into them. They seemed to be thriving well, too, until our expedition botanist, on the way back, got tired of waiting and decided to start his experimenting prematurely. He wanted to see if our own plants would grow in the soil of the third planet and planted a few specimens of our plant life along with the other plants which then died, quite rapidly."

Sarlath's eyes grew bright with interest. "That is very interesting," he purred. "Did our plants die, too?"

"No, sir, they are still alive and flourishing."

Sarlath fell into thought. The admiral waited patiently for dismissal. Finally, his ruler looked up and spoke again. "Tell me, admiral, how did you like the third planet?"

"It is a very beautiful world, sir."

"Yes, so I had gathered, but is it a place where we could live in comfort?"

"Large areas of it are more suitable for us than our own planet, sir," answered the admiral. "That is, as far as the climate goes. A few preliminary tests indicate that the plant and animal life of that planet is rather poisonous to our own animal life and, no doubt, to ourselves."

"Yes, of course. Well, thank you, admiral. You may leave now."

Admiral Kulon bowed stiffly and quietly left the room. Sarlath kar Majon rose and walked to one of the windows, where he flung open the casement. The view thus disclosed exhilarated him, as it had never failed to do. He was looking from the heights of a great tower across a large city. A garden city, Sarlath thought as he viewed with perennial approval the regular rows of large red trees and extensive beds of green and blue flowers scattered pleasingly among the buildings. Beyond the limits of the city, the vegetation was less controlled and spilled in waves of luxuriant, glowing red over the fertile farms to the distant horizon. As he looked over his city, his thoughts wandered and he dreamed of an even more glorious city, soon to stand on another planet.

A sudden, faint murmur from far below told him that the admiral had reached the streets and was being greeted by cheering throngs.

Joseph Jones taught botany at the university. He was standing in the departmental office one morning, collecting examination booklets for an impending quiz, when he heard his name mentioned behind him.

"I think that Dr. Jones can help you," the departmental secretary was saying. Noticing that Jones had turned inquiringly, she called, "Oh, Dr. Jones, this gentleman would like to speak to you."

Jones walked over to the stranger, a burly man with weather-beaten countenance, who clutched a small package very carefully under one arm.

"My name is Martin Hale, Dr. Jones," the man said, "I'd like to ask you about a strange plant I found on my place yesterday."

"I'm glad to meet you, Mr. Hale," Jones said, pleasantly, extending his hand. "Come up to my office and we'll look at it. I have a few minutes before my next class."

In his office, Jones waved Hale to a chair. "I suppose that you have the plant there in the package," he said. "Shall we look at it?"

"Sure," answered Hale. He began to undo the wrappings. "I found two or three of these plants on a bare spot in one of my fields yesterday—I'm a farmer up near the town of Bryant," he added in explanation. "I thought I'd get expert opinion on it. I've never seen anything like it at all. Have you?" he asked, lifting a small flowerpot from the package.

Jones had been courteously concealing his boredom as he awaited the sight of something ordinary enough in the way of plant life. He was not prepared for the blaze of color that flamed from the tiny red plant in Hale's flowerpot. With a soft exclamation, he walked rapidly around the end of his desk and gently took the pot from the hands of the other man.

Hale was gratified by Jones' interest. "You think it's something new?" he suggested. Jones did not answer. He was peering into the brilliant blue flowerlike growth that topped the red plant. He pulled out a pencil and gently parted the compact blue petals. Then he rubbed the translucent red leaves caressingly between his fingers. The clangor of a bell at length penetrated his absorption.

"I'm very sorry, Mr. Hale, but I must go to class now," he said. "Will you leave this plant with me?" At Hale's nod, he continued, "I've never seen anything like this before and I'd like to look it over some more. It seems to be entirely new. And I'd like to drive up to your farm next Saturday and look the area over, if I may."

"Certainly, Dr. Jones, I'll be glad to have you come up. There are a few of these plants left there. My farm is a couple of miles north of Bryant, a little ways off the main highway."

"Well, good-by then until Saturday," Jones shook hands, picked up the booklets, and ushered Hale to the door.

About halfway through the examination, Jones' gnawing curiosity regarding the red plant overcame his determination to prevent cheating. Deciding that his assistant could do the proctoring alone, Jones hurried back to his office and began a more thorough study of the mysterious little plant.

The first look through the microscope at a section of one of the leaves brought forth an exclamation of surprise which was followed by others as he worked on. Lunchtime came and went unheeded as his pile of notes and sketches grew. It was evening when he finished, too excited to be hungry.

He was on the road soon after daybreak the following Saturday and it was still early in the morning when he pulled into Hale's barnyard. Hale greeted him warmly but, after the first smile of pleasure,

his face relapsed into lines of worry. Jones asked him about it in a friendly fashion as they walked along the lane flanking the fields and towards the site of the red plants.

"You say that I look worried," remarked the farmer. "Well, I guess I am. You'll see why in a moment. I don't even feel like talking about it." The lane turned to the right around a heavy growth of trees. "Here we are. What do you think of the pretty red plant now?"

Ahead of them was an area of several acres, covered with dead corn plants, brown and sere in the center of the dead patch, merely drooping and yellow on its outskirts. Sparsely scattered on the ground between the taller cornstalks were numerous little red plants.

"Things have been moving fast since I found the first ones. A lot of these plants came up the day I was down to see you and they've been spreading steadily since then," explained Hale. "And now have a look over here," he said, leading Jones a little farther down the lane. "This happened last night."

"This" was a dead cow, its body twisted and legs stiffly extended. Jones guessed that it had partaken of the red plants which were crowding into the pasture next to the corn field. As he walked around the carcass, he noticed that there was a zone of dead grass around the red plants. He called this to Hale's attention.

The farmer nodded gloomily. "Yes, that's how I can tell what part of the field is going to be hit next. The green plants start dying off first, then the red plants come up."

"You know," said Jones, "all this looks as though the red plants contain some sort of poison, a poison strong enough to kill a cow. It looks to me as though they give off this poison into the soil where it kills off the other plants and even germinating seeds seem to give off enough of the poison to kill surrounding green plants."

"Could be," agreed Hale, "but what can I do about it?"

"I don't know yet," confessed the botanist. "Since the green plants die before any other warning signs appear, it's hard to say what to do. We'll have to work on it." He walked across the lane to the edge of the dark woods and kneeled down. "Ah, I thought I saw one over here, too. And here are a few more leading into the woods. I wonder if they didn't come from in here." He walked a little ways into the woods until he came to a stout barbed wire fence. Beyond the fence, he could see only a tangled growth of vegetation.

"People don't go in there, as a rule," warned Hale, who had followed. "That's nothing but a few hundred acres of undrainable swamp land. It's real wilderness and very dangerous, with quicksands and who knows what else. My little grandson disappeared in there with his dog a couple of months ago and we didn't find a

trace of him." Hale's face was impassive.

"I'm sorry." Jones remained silent while he walked out of the woods. Then he spoke again. "Mr. Hale, I'd like to take some of these plants back to the university with me and work on them there. I brought along some boxes into which I had intended to transplant some live plants but now, seeing the effect they have on other plants, I'd like to cut a lot of them and have somebody work on the poison they contain. Can you let me have some sacks to put a lot of the plants in?"

"Be glad to help you any way I can," said Hale. "I'll get some tools and sacks. You can have all the red plants you want."

It was late in the evening when Jones got back to the university town but he nevertheless went directly to the home of Bauer, of the organic chemistry department, and ruthlessly disrupted a bridge game in which Bauer was engaged. After apologizing briefly for his interruption, he told Bauer of the mysterious red plants.

"So you can see," he continued, "it is very important that we discover all that we can about this plant. The way it looks now, it needs only to spread to become our major plant pest. Now, what I wanted to ask you is this, have you had any experience in the structure proof of natural products?"

"Well, I did my thesis research on one of the more obscure alkaloids," admitted Bauer. "Why?"

"Would you be willing to drop the stuff you're working on now and undertake the isolation and structure proof of this poison that these plants apparently secrete into the soil? I can assure you that if it works out well, you'll get a bigger name out of it than from the work you're doing now."

"Why, yes, if it's important, I guess so. I have a couple of graduate students who haven't yet started their thesis research; I can put them on the problem, too. First, we'll have to get the material in pure form, preferably crystalline. From then on, it may take time. If the material hasn't been identified before, we'll have to get good analyses of it, establish its empirical formula and start running degradation reactions. With great good luck, we might have the structure pinned down in a year or so. Is that good enough?"

Jones frowned at the estimate of time. "I guess it'll have to be."

A month later, Jones had published a preliminary note regarding the discovery of the red plants and had tentatively proposed a name for the new plants. He was in his laboratory, working on the problem of certain structural peculiarities of the plants, when a stocky stranger bustled in without knocking.

Jones looked up, scowling in annoyance at the disturbance, but the man was unabashed. "Dr. Jones? My name is Mahon; I'm from the Department of Agriculture. I read your very interesting note on some new, red plants a week or so ago and that's what brings me here to-

day." Without further ado, Mahon put a box on Jones' laboratory bench and opened it. "Is this the type of plant you discussed in your note?"

Jones forgot his annoyance. He peered into the box for a moment, then shook his head. "It's like the plants I have, but it isn't the same. Your plant is larger, the shape of the leaves is different, the blue flower is much smaller. I'd say that it is definitely a different species. Where'd you get it?"

Mahon smiled slightly. "I picked this particular one up this morning a little while before I came here—about ten miles out of town. However, you can find ones like it nearly any place in the country, perhaps in the world. In the last three or four days, they have appeared everywhere and are still coming up."

Jones was dismayed. "Do they have the same effect on green plants as the one I described?"

"They seem to be even more active that way, so far as we can tell from your printed description of their action. I came over here this morning to get whatever information I could from you about these things. They are already a serious threat to our crops. We'll have to fight them some way."

"I'm afraid that I don't know much more than what I published," Jones said slowly. "I can add a few things, though. They seem to reproduce sexually, so far as I can tell, but the structure of the flower is such the self-fertilization is easy. The particular plants that I have studied have a very short life cycle; I have raised some plants in my greenhouse here from the seed of the original plants that I studied a month or so ago. Would you care to look at them? We'll take your specimen along for comparison."

Down in the greenhouse, Mahon nodded his head as Jones proceeded to point out differences between the plants. "Yes, they are distinctly different. However, the action of their poison seems to be the same. How about that poison—is anyone working on it?"

"Yes, one of our men in the chemistry department has been working with it for a month now. He has isolated it and has had amazingly good luck with the structure proof, too. He told me yesterday that it resembles colchicine in many ways. But it'll be some time before we know its exact structure and even a knowledge of its structure won't help very much, probably."

Jones continued. "These plants don't tolerate shade very well. The ones I got in here didn't grow at all for a few days while it was cloudy outside. And they need quite a lot of water, too, to keep growing. Not that they necessarily die if it is cloudy or dry; they just don't grow as well as green plants."

Mahon nodded thoughtfully. "Do you have any idea where these plants come from?" he asked.

"Well, obviously, they didn't originate on this planet. They are too specialized, too widely divergent from any of our known species, and no intermediate forms are known which would link them with known

species. So that leaves just one possibility, doesn't it?"

A gentle tap on the door of the greenhouse forestalled Mahon's answer. "Hello, Hale," Jones said, opening the door.

"They said upstairs that I might find you down here," Hale said, curiously eying the plant Mahon held.

Jones introduced the men. "Mr. Hale is the man on whose farm we got the first of the red plants," he explained to Mahon. "What brings you down here, Hale?"

Hale was bitter. "I've been in town for a week or so. You might say that I have retired. A few years earlier than I had planned, but I'm retired."

"Why, what's wrong? The red plants?"

"You guessed it. They killed my crops and my livestock. When the poison soaked down to my water supply and made my wife and me sick, I decided it was time to leave."

"Terrible," muttered Jones, shaking his head sympathetically. "I'm afraid that it's just a preview of what's to come for everyone if we don't do something quick." He told Hale of the sudden spreading of the red plants across the country. "You know, I think that a clue to the whole business might lie on that farm of yours, Hale. The first plants were found there and they have been established there for a month, the oldest and most concentrated growth of them that we have observed so far. Perhaps we can get some idea on how to handle them by observing them under such conditions. Would you care to go up and look at it tomorrow, Mahon?" Mahon nodded enthusiastically. "And you, Hale, do you feel equal to going along?" Hale said briefly that he was quite fit for the trip.

Jones picked Mahon up outside his hotel the next morning. Hale was seated beside Jones in the front seat of the car. As Mahon climbed into the back seat, his eye ran over a pile of tools stacked on one side and fastened on a heavy revolver lying on the seat.

"Do you expect to use the gun, Jones?" he asked.

"No, probably not, but I have a theory that asks me to have it along," replied Jones.

As they neared Bryant, the effects of the red plants could be seen more and more plainly. Apparently, they had been spreading from Hale's farm before the second and more recent crop had sprung up. Not a single green plant was to be seen on Hale's farm as they drove into the former barnyard. Hale seemed profoundly depressed by the sight of the red desolation of his beloved farm. Jones climbed briskly out of the car and strapped on his revolver. Then he handed out tools to the others, picked up a spade himself, and said, "Let's go."

They walked rapidly past the fields where the newer growth had appeared. As they approached the place where the strange plants had been seen first, Jones stooped and examined some of the plants, then beckoned Hale and Mahon to him.

"Look," he said, "don't these look like three different varieties to you? Here is the original variety we first saw, here is one of the sort you brought me, Mahon, and here is a vinelike one. Neither of these last two were around here a month ago."

Hale straightened up impatiently and looked around while Jones and Mahon continued to examine the plants. At his exclamation of surprise, Jones looked up. "What's wrong?" he asked.

"Nothing much, I guess," answered Hale, "but it looks like someone else has been around here since I left. There are some footprints here. Rather odd footprints, too."

Mahon and Jones came over to look at the strange footprints which wandered across the old corn field, stopping twice to merge into trampled areas around small holes dug in the field, then led more or less directly into the swamp. Hale looked at Jones. "No one around here would have any reason to go in there," he said. "Everyone knows how dangerous it is."

Jones said suddenly, "Maybe we should go in there after him. Will you lead the way?"

Hale was surprised but nodded. "Be very careful where you step when we get to the pools. There are quicksands in some places."

A few of the trees in the old swamp still retained a few yellowed

leaves but, for the most part, they were black skeletons. The red plants grew luxuriantly wherever the defoliation of the trees permitted sunshine to enter the tangle. A faint but heady odor rose from the plants crushed underfoot. Red vines with barbed tendrils clung tenaciously to their clothes as they pushed their way through. The footprints they followed were lost in the first few yards.

Hale suddenly stopped and held up his hand for silence. Ahead of them they could hear something crashing through the underbrush. Very cautiously, they resumed their advance and, coming to the first of the stagnant pools, skirted it, being careful to remain concealed in the brush along the shore. In the distance, they heard a faint, metallic clang, then silence prevailed again. The men had not proceeded much farther when the oppressive stillness was broken again by a rapid, throbbing drone. With it came such an intolerable sensation of brilliance and pressure that they fell dizzily to the ground. They did not get a glimpse of the great shadow which swept up to the sky from a spot nearby.

Jones groaned and pushed himself to a sitting position. His nausea gradually subsided. He noted that his companions likewise were stirring again. After a little while, they felt able to stand.

"What was that?" puzzled Hale.

"Unless I'm very much mistaken," said Jones softly, "that was a spaceship taking off."

"Huh?" grunted Hale, surprised.

"Never mind. We'll come back to that later. Now, where do you think you heard that noise in the brush?"

Hale pointed. "I'm not sure, but I think that it was over in that direction."

Jones pressed into the lead. The stranger's trail was not hard to find, for the footprints were deeply sunk into the soft earth. When they had followed the trail for a short distance, it climbed onto higher and more solid ground. It was there that they saw the box.

It was a sturdy metal container, with rounded edges and a pair of handles. In it lay a trowellike tool with a few green plants. Jones dropped to his knees beside it and examined the plants. They were twisted but of a bright green color. Jones gently parted the plants and pointed.

Mahon's eyes widened in surprise. "That *is* interesting," he murmured.

"More than merely interesting, Mahon," said Jones. "This may be the solution of our whole problem."

"Wait a minute," protested Hale. "I see those two little red plants in the box there, but why are you getting so excited?"

"If you look closely, you will see that they are growing from the same clump of earth as the green plants. The significant point is that the green plants are not dead, that they have withstood the poison. You will also note that the red plants are very small and puny."

"Yes, I can see that," replied

Mahon, "but I don't understand where they came from or why they're not dead."

Jones rose to his feet. "It all ties in, where the red plants came from, why these plants are resistant to the poison, what that noise we ran into back there was. I can explain it, I think, if you don't mind a long-winded explanation." He went on. "Let us suppose that two or three months ago we had visitors from another planet, a planet where these red plants grow. These guests of ours did not announce themselves but landed in this swampy area, where they would be reasonably safe from discovery by humans. Then they proceeded to explore the area and, as they walked out of their ship, they unknowingly carried some of the fine, almost dustlike seeds of these red plants with them on their feet and clothing. Walking about, they sowed the seeds both down here and up on Hale's farm when they kidnaped his grandson. I suppose that they carried the boy off as a specimen of life on our planet.

"The seeds they left behind them germinated and the plants overran the farm. The poison they released into the soil killed all the living green plants and most of the seeds of green plants it came in contact with. However, it had a different effect on a few of the seeds. You remember that Bauer said that the poison was chemically similar to colchicine? Well, colchicine has been used for years as an agent for producing mutations in plants. This poison apparently acts in a similar manner. In this case, the mutation produced by the poison was one which could withstand the further action of the poison, one which could grow in soil saturated with it. These plants here are products of that mutation, which apparently occurred in several seeds, of a couple of species of plants."

"Where did the second crop of red plants come from then?" asked Mahon.

"Isn't that rather obvious? The strangers took samples of our plant life back home with them, no doubt, and found that they would not grow with their own red plants. So they decided they had an easy way to take over our planet; they simply came back and broadcast seeds of their own plants all over our planet. Then they settled down here in the swamp and waited to see how things were getting along. That noise and other business we ran into must have been their ship taking off. One of their crew was out picking up these few mutations, as I see it, when we interrupted. These plants here were the ones he had found. I'm sure they realized the possibilities these plants have. If we hadn't found these mutations now, it might have been too late before we found others."

"You think that these resistant plants can crowd the red plants away from the sun and nourishment and help us finally exterminate them?" queried Mahon. "These plants look pretty sickly to me."

"To me they look remarkably healthy and sound," Jones answered quietly. "The first generation of a

mutation produced by colchicine is usually dwarfed and misshapen. Succeeding generations are generally fine, healthy plants. I'm pretty sure it will work that way here, too."

Hale broke into the conversation. "Let's pick up these plants and get out of here. Our friends might come back anytime."

The ride back was a silent one. They were nearly home when Mahon spoke again. "These green plants that withstand the poison—they are probably poisonous themselves, having grown in poison-soaked soil, and we couldn't use them for food. All these people on the other planet would have to do is to keep dropping their seeds on us and we would starve to death anyway, whether their red plants grew or not."

"Quite right," agreed Jones. "I've been thinking of that. We'll have to carry the war to them."

"How can we?" demanded Hale, "we can't leave this planet."

"No, not yet, anyway. But the War Department has automatic rockets that have gone to the Moon and back. From here to another planet, one way, isn't really so much farther. We can't go along ourselves but we can send representatives, say, a few loads of the seeds of poison-resistant creeping jenny or quack grass. Or perhaps Scotch thistle is your favorite weed?"

Mahon stared for a moment, then a grim smile crept over his face.

Sarlath kar Majon glared angrily at the little committee of botanists. Only a supreme effort of their wills kept them from cringing before his fury. "That's quite enough for now. I expect something better than that. You may leave," his voice snapped like a cracking whip.

The scientists bowed stiffly. As they turned to leave, lines of despair reappeared on the faces they had held impassive before their ruler. When they were out of the audience room, the fatigue under which they had labored so long sagged their shoulders.

Long-established habit took Sarlath to a window again, but he found no solace in what he saw. The view was no longer one which lifted and inspired. As Sarlath gazed out of the window, he wondered bitterly why he had ever considered green to be a beautiful color. The landscape beyond the limits of the city was covered with a repulsive green, spotted with red where a few red trees had survived the onslaught of the crawling, ubiquitous green vines. Within the city, the red trees were mostly still alive but the fine beds of flowers had vanished beneath loathsome green plants.

A faint, steady roar beat up from far below where hungry mobs had resumed their attack on the palace doors.

THE END.

BRASS TACKS

The Lensman story is coming right up!

Dear Mr. Campbell:

The last issue came as a very great surprise, but a wonderful one, and full of 'portents for the future'. Extrapolating vaguely into the future, I can foresee another "Golden Age" such as I believe existed from "Gray Lensman" in the first of '40 until "Clash by Night" in the middle of '43, and which some ancients believe fell in or about '35. In short, the stories contain three of the five best of the year, the art work is approaching perfection, and even the article is interesting.

The stories should be the first thing under consideration.

1. "E for Effort"—Sherred has impressed me more in his first story than most authors do in a full career. The background idea is brand new, the characters are people in the real, living sense of the word, and the story hangs together with a vividness that kept me tied to my chair to the last page. I could put in a minor kick about the ending, but the rest of the yarn is too good. I'd like to see more of this man—the sooner, the better.

2. "Fury"—This serial has possibilities. It may amount to a grand story; it may fizzle and die—I can't tell yet. But O'Donnell has brought back the situation and groups of characters that made "Clash by Night" one of the five top stories to appear during your reign, and I don't think he'll let us down now.

3. "Tiny and the Monster"—With my liking for Sturgeon, it is sheer heresy to see him in third place, but the competition was too stiff. This story leaned a little bit too much toward fantasy for full appreciation, but it has the elements

of characterization, continuity, and newness that make an A-1 novelette.

4. "The Journey and the Goal"—Here we slip from the wonderful to the merely interesting. Davis tried and didn't do too bad a job, but he telegraphed his ending ahead of time—with the help of the editorial blurb. There were a lot of loose threads drifting around in the plot that never got tied down.

5. "Jesting Pilot"—No comment, though it wasn't bad.

Next on the agenda is the art work. I think you've finally got that licked. Orban makes a fine work artist, despite some claims of cartoonism, and Schneeman's promised return puts the icing on the cake. Cartier is fine for maybe one story an issue, though he would fit best in *Unknown*, if *Unknown* were just existing to fit him in. With Rogers around, the cover situation is loaded—his monopoly was perfect. But Alejandro seems to have several backers and Schneeman should never be overlooked.

This wouldn't be a letter without a few suggestions and complaints. Remember book jackets? Why not try them again—not as a steady diet, but on the serials like you did on "Slan"—and once in a while on a lead novelette? And please get the lettering off the cover. Before you went back to the tiny editions you had that situation pretty well under control—try it again.

Now for authors. You've got some good probables that have appeared in the last year—Sherred, Kahn, Latham, perhaps Chan Davis. And I can trust you to keep trying to develop new men. But couldn't you try to dig a few of the ancients out of retirement. You had two good periods where steady writers came in—once it was Clement, Padgett, Smith and Stewart; earlier, Van Vogt, Asimov, Sturgeon and Heinlein. Most of these men are writing regularly now, but two of them seem to have slipped through your fingers. Stewart could toss together a wonderful yarn about "C.T." Drake's troubles now that he has his bedplate. Heinlein gave Rhysling away to the *Post*, but Nehemiah Scudder would never be at home on slick paper.

About editorial policy, I can hardly term myself a competent judge. But stories that border on fantasy really should be avoided. And the atomic bomb is not as important as industrial applications of atomic engineering.

Smith seems to be coming in for a great deal of adverse criticism nowadays. I'm not strictly against him, though his writing is degenerating toward the hack stage. He should be used sparingly. Van Vogt is the man who is coming under my guns. I'm tired of his patrician principal characters and his belief that spieling off a string of large numbers gives a story galactic scope.

Another Smith, E. E., occupies one corner of my curiosity. What is the final danger from the second galaxy and can it be determined

in one final stupendous Lensman epic?—James Bourne

Personal for Williamson.

Dear Mr. Campbell:

Allow me to express my complete satisfaction and enjoyment in reading one of the most significant stories ever to be published in your magazine; I mean none other than "The Equalizer," by Jack Williamson in the March 1947 issue of ASF.

However, I find one snag with the story—it can happen only in the realm of fiction, yet such a gadget as the "equalizer" could do so much good in this sick world of the present day that I feel there must be some substance behind it to back it up. One can never tell—

At any event, I would consider it a personal favor if you would convey my congratulations to Mr. Williamson for this fine story.—L. N. Jonquier, 22 Frere Road, Durban, Natal, South Africa.

Was that a 1947 or 1948 number?

Dear Mr. Campbell:

Most unusual! To think that I should be the recipient of your time travel experiment! Frankly this seems to be the proof of the pudding. I have conditioned myself to think that all these yarns about sending stuff through time, particularly backwards, was tripe, but—Why not be honest about it and admit that Smith is not only a good writer but also that he proves what he says by sending out August "Astounding Science Fiction" to be on sale at my favorite stand before even the July came. The follow-up is also interesting. Imagine, if you please, your distributor deliberately upsetting the experiment by sending out a truck to collect the unoffending issues so that nobody else can join in the fun.

When I told Don Brazier about getting the August issue he got itchy, dashed to the stand, and came back with the report that they had all been picked up.

You think I'm kidding? How about this?

"The End Is Not Yet" started out well. I'll be waiting—till August, doggone it—to get more.

Wirtberg was obviously the original human guinea pig in "Insomnia, Inc." After pages and pages Walton finally admitted it.

Smith's "Rat Race" was good—but why didn't he suggest that he was also sending the August issue I got back through his magic circle so that I could get it in June—the 17th to be exact. Or is he waiting to see if somebody found it on the sled in the basement? In that case tell him for me that it went through space as well as time and landed in Milwaukee. He doesn't know anything about it yet, but will after he does it—sometime in July. How could he know, or how could any of you know? You haven't done it yet. You couldn't know anything about it until it's done. Just I know because I got the issue.

So a prophecy: Some time in July some one of you will send an August A S F through the silvery loops of the rat trap and I got it now. Time travel vindicated! Now figure out how I can put myself and family back or ahead to some "peaceful" era.—Eldon G. Wolff.

Jack Williamson usually comes up with most interesting villains!

Dear John:

I have absolutely no quarrel with your July ASF, except that Roland Silver has me up a tree on one of his "deceptively simple" little problems.

The scorecard first, however:

(1) "Fury"—held up till the end and did not compromise with character. O'Donnell showed a lot of self-restraint in passing over the juicy life of the Free Companions to set his second yarn so much later. Of course, there may be a need for the Companions to be reintegrated in a time of interplanetary expansion.

(2) "With Folded Hands"—good to have Williamson back. Illogically, I seem to hold his refusal to compromise with his assumptions against him. Having the villains win is hard on us Hollywood-raised folk.

(3) "Logic"—angle good; story typical ASF.

(4) "The Figure"

Timmins' illustrations do not appeal.

And now those problems—

No. 1 wasn't hard once I stopped fiddling with trial and error and really looked at the problem. Your checkerboard is a very definite organization of pairs of red and black squares, such that any little two-by-one rectangle must include one red and one black square. Removing opposite ends of a diagonal takes out two reds or two blacks, and leaves you with 30 pairs and two extra squares of the same color, which by the arrangement of the board can't possibly be together.

I suppose there is an equally simple logical short-cut to No. 2, but I can't even solve it the long way 'round. My math has certainly gone flabby.

I hope that Brother Silver's "elegant yet simple" solution to this doesn't depend on the fact that his time-sequence—1 minute, ½, ⅓, ¼. . . . 1/N minutes before 12—will never quite reach 12 o'clock . . . since no matter how many pairs of balls are dumped into the basket, you will still be an infinitesimal fraction of a second short of 12. If that is his point, then I suppose I have solved it by a mathematical quibble.

By straight attack, on the other hand—assuming that it is legitimate to approach 12 as a limit with your N'th step—I come out with a converging series, but I lack the mathematical power to work out what it converges at—and haven't the proper books at hand to work out the freshman algebra—if it is freshman algebra—again. After

as many steps as you like—say N of them—this series comes out to be

$$W \text{ (weight)} = \frac{1}{1\times2} + \frac{1}{3\times4} + \frac{1}{5\times6} + \cdots + \frac{1}{2N\,(2N-1)}$$

The sum of this diverting little series I am unable to calculate in my present state of ignorance, even though it is quite easy to break the thing down into another very familiar form of alternating series, namely

$$W = \frac{1}{1} - \frac{1}{2} + \frac{1}{3} - \frac{1}{4} + \frac{1}{5} - \frac{1}{6} + \cdots\cdots$$

All these two tell me is that the more little balls drop into the basket, and the more Hercules snatches out—and he will have to do some fast and fancy snatching along toward the end of his "endless" one-minute stint—the closer the weight comes to some value larger than ½ pound—see the first series—and less than 1 pound—see Series 2). Some brute effort seems to show that both series are bearing down on something like half the square root of two as a limit, but I wouldn't bet on that either, for I have long since forgotten—if I ever knew—how to develop a series for this or any other expression of its ilk, and it would be entirely beyond me to get any such peculiar result by pure inspection.

Let's have some more. They are good exercise for the skull.—P. Schuyler Miller, 108 Union Street, Schenectady 5, New York.

Boskonians didn't eat it—but the war ate a lot of Smith's time, and he usually took two years per novel.

Dear Mr. Campbell:

It's good to see Schneeman back on the cover again. His characters live, his paintings have a three-dimensional quality, and he has unfailing good taste—something quite rare in the pulp field as a whole, though not so much at Street & Smith. Reversing the phrase, it makes Astounding stick out like a well-proportioned finger in a mass of sore thumbs.

I like Cartier best on the inside. His work is imaginative and intelligent, though better suited to the late, lamented *Unknown*.

For the record, first place in the June issue will have to be shared by Van Vogt and O'Donnell; I lack the critical judgment to separate them. "Centaurus II" invites comparison with Heinlein's "Universe"—a task I likewise shun. "Fury" is shaping up into a fine novel, though a trifle spotty. This author's output—under his assorted pen-names—is prodigious, but the quality of his work seems to suffer very little. *More* power to him.

Davis, Tenn, and Jones follow in

that order, with an exceptionally good group of short stories. "Letter To Ellen," in particular, required —and received—skillful handling.

The Coupling article looks good, but, having just finished an astronomy exam at college, I think I will postpone the pleasure for a while. The instrument on Mount Palomar should turn up some interesting material for articles.

Before signing off, I renew my plea for a resurrection of *Unknown* —preferably replete with de Camp, Williamson, *et al.* And what has happened to Dr. Smith's new novel —did the Boskonians eat it?—Chad Oliver, 1311-25th Street, Galveston, Texas.

Good guzd!

Dear Mr. Campbell:

May I present my theory of how the Solar System was formed? Everyone else has a theory. I have heard of others less logical.

The Galactic Being was sitting and meditating, with his back to a new model of a Cosmic Force fan. Suddenly he arose and whirled around to face the fan. From his pocket he produced an object he had been carrying around for days. It was a guzd egg. After cautiously looking around for observers, he hurled the guzd egg with great force into the fan! Space rocked with his laughter for many light-years around. No more psychosis for him. Abruptly the laughter ceased—had he in his galactic wisdom overlooked something? Indeed he had! The guzd egg was old and bad. As soon as it had hit the fan, a young guzd had emerged. In the throes of simultaneous birth and death the guzd tore away the blades of the fan and imparted its radioactive life-force to the central part, which blazed into a nova. The Galactic Being departed immediately by the use of sub-space for parts unknown. Pieces of fan blades, guzd egg, and guzd became the planets.

Many thanks to George O. Smith for performing the research work which made this theory possible.—Franklin Kerkhof 1705 Q St., N. W., Washington 9, D. C.

Personal for a reader.

Dear John:

Could you possibly notify Carl Christensen through Brass Tacks that the letter he addresed to me in your care had no address for him on or in it? The letter definitely called for an answer and I would not have him think that I was too careless to reply. From his letter he is a constant reader of Astounding; that seems to be the only way to reach him. How about a two-liner: "Calling Carl Christensen —if he will send in his address, Robert Heinlein will answer his letter" Huh?—Bob

The big young man wanted insurance, which was all right. But it was the curious nature of the insurance he wanted that stirred questioning! Against putting phenylthiourea in the reservoir, or kicking a policeman. . . .

MARGIN FOR ERROR

Illustrated by Elliot

—BY LEWIS PADGETT

Ferguson had had this feeling before, though never so strongly. Until now the faint qualms he sometimes felt had fluttered through his mind and vanished too quickly to be recognizable. That was because he had never before talked with a Benjamin Lawson.

This time the qualms hovered, lingered—took focus and forced themselves up through the layers of the mind to his awareness. He had to free them and give them a name.

A name? But there was no name for qualms like these.

Is there some proverb that points out the tendency of social crises to create a man who can deal with them? Ferguson groped briefly for a literary peg to hang his baffling suspicions on. Failing, for the mo-

ment he crushed down the uneasiness and looked dubiously at Benjamin Lawson's face. The qualms sank docilely enough. They had been recognized. They could wait, now.

All Ferguson brought back with him from that brief excursion into the realms of the submerged mind was the knowledge that there was about Lawson something not to be trusted, and a suddenly much strengthened respect for his own hunches. Reason played no part in it. Ferguson *knew*—in effect—but he did not quite know that he knew.

For many years, he realized, he had been anticipating this. He had expected the coming of . . . of—

Of Benjamin Lawson.

He remembered how it had started.

In an office of ILC, a televisor screen buzzed a peremptory signal and turned bright red. Mr. Greg Ferguson, whose qualifications for vice president were unusual, turned on the descrambler automatically and winked at his guest. Before A.C. —Atomic Control—Ferguson would certainly have been a criminal, but in ILC he was an integrated, useful member of society. The fact that there were four hundred and ninety-nine other vice presidents never troubled him.

ILC stood for the Federal Bureau of Insurance, Lotteries, and Crêches.

"Mr. Ferguson marked as free," a voice said. "Request attention to apparent swindle attempt."

"Little the poor fool knows," Ferguson remarked. "Cagliostro himself couldn't swindle ILC. But they certainly try." He watched the screen fade to a blue-and-yellow design, a symbol of a playback.

Mr. Daniel Archer beamed. By profession he was a Fixer, which was a combination of attorney, publicity agent, sociologist, and secretary. He worked for a politician named Hiram Reeve, which was why he had called on Ferguson and listened for half an hour to the vice president's low-key boasting about how ILC worked.

"Wagner—" the televisor said.

"Tell that robot he needs a vacation," Ferguson ordered. "Not Wagner. Ben Lawson. That right, Mr. Archer?"

Archer nodded. "He's the one. Of course there may be nothing in it, but we never take chances. At least I don't."

Ferguson pondered while the visor screen turned pink with embarrassment, flashed rapidly through a selective color-wheel, and hunted for Ben Lawson's playback. This wasn't the first time a Fixer had asked Ferguson's advice. Fixers by definition were thorough investigators. They had to be, in order to keep their patrons in power. And there was less pork-barrel rolling than one might have expected, since good Fixers were always in demand, and they had the right to switch allegiance whenever they decided that their patrons' tactics conflicted with sound sociology. Archer was a fat, sardonic little man, but he had clever eyes.

"Wagner," Ferguson said, while

they waited. "That was a simple case, open and shut. I used straight Operation Suicide on him. He had it all figured out. Except that he wasn't sure he could take out the policy—"

"Don't they all wonder that, when they're working an angle?"

Ferguson decided that Archer was playing dumb. Well, let him. Ferguson himself was always happy to explain the workings of ILC and his own job. The fact that he was also justifying himself had never occurred to him.

"Yes. And Wagner was surprised when we O.K.'d his application. Double indemnity covering suicide in any shape or form. I gather he's been trying to cut his throat ever since. Incidentally, he wants to take out an accident and liability policy now; seems he's got worried about accidental death since he isn't covered for it."

"Will he get the policy?"

"Why not? I told you the average percentages. We can't lose on accident, Mr. Archer. We can't lose. Here's Lawson's playback; let's catch it."

A gleam came into Archer's mild eyes. He leaned forward to watch the screen. It showed an office in an ILC bureau in a distant city. A clerk—an ordinary front man—was rising from his chair as the client entered. Ferguson touched a stud in the auxiliary screen and watched it with half his vision while pertinent data, recorded and correlated by robot machines, flashed into view.

Brain radiations normal . . . no important glandular stimulus . . . adrenals normal . . . body temperature constant at 98.8 *correct for client after mild exercise . . .*

"Confident," Ferguson said. "He's got something all worked out. The perfect crime—he thinks. He's the one?"

Archer nodded. They studied the client. He was a perfectly ordinary young man, who might have been stamped out with a matrix labeled *Specimen of Younger Generation, Male, Sound in Wind and Limb.* He was simply a big, blond youngster, with blue eyes, a pleasant smile, and, presumably, not a worry in the world.

Through the screen the clerk said, "Mr. Lawson?"

"That's right. Ben Lawson."

"Please sit down. How can I help you? Not a crèche registration, I suppose—unless you're married?"

Lawson smiled. "Me married? Not for quite a while yet. I'll let you know in plenty of time before the kids come along."

The clerk laughed dutifully. "Then it's insurance or lottery. We've got the Pimlico, the Queensland Royal Blue, the Irish—"

"I don't gamble," Lawson said. "It's insurance. Can I take out insurance to cover these possibilities?" He pushed a slip of paper across the desk.

The clerk said, "We insure everything that isn't antisocial, sir. We insure against fire, failure, fraud, felony, fright, fits, flaying, fleabites —" It was a familiar gag at ILC.

But now the clerk had glimpsed the list. He slowed down and stopped. He frowned, gave Lawson a quick glance, and said, "You say you don't gamble?"

"Well, I suppose you could call insurance a gamble, couldn't you? What's the matter? Have I put down anything antisocial on my list?"

The clerk hesitated. "We've got our own arbitrary rules about antisociability, sir. Homicide is, of course, but we insure against homicide. And against most crimes, except when the client's too poor a risk. You understand, there has to be a complete examination—"

"I'm healthy, I think."

"Not only you, sir. There has to be a survey into your background, your environment, your associates—"

"Complicated, huh?" Lawson asked.

The clerk swallowed and looked at the list again. "Kicking a policeman," he said, rather faintly. "That . . . ah . . . seems to be the mildest item you want to be insured against."

"Would that be antisocial, by your rules?"

"I can't answer that offhand. However, all these . . . items . . . seem rather unlikely, don't they? I should think you would be better advised to select other policies. We would be happy to make up a selection for you after our personal survey has been completed, something perhaps more suitable—"

"Oh, suit yourself," Lawson said. "Those are the policies I want, though. If I can't get them, I'll have to think of something else. I made quite a list, in case some of the items weren't acceptable to ILC. But I haven't exhausted the possibilities."

"Putting phenylthiourea in the city reservoir," the clerk murmured. "You want to be insured against . . . ah . . . putting phenylthiourea in the city reservoir?"

"That's right," Lawson said cheerfully.

"Oh. Is this a toxic substance?"

"Nope."

"Do you have any intention of putting phenylthiourea in the city reservoir?"

"That's what I want to be insured against," Lawson said, looking wide-eyed and innocent.

"I see," the clerk said, coming to some conclusion. "Would you mind answering our routine questionnaire now? An appointment will be made as soon as we've completed our survey."

"I suppose the premiums would be low enough for me to handle?"

"They'd vary."

"I haven't got much money," Lawson said. "Still I guess something could be worked out." He smiled slowly. "O.K., the questionnaire?"

"You can use this visor," the clerk said, making an adjustment. "If you'll signal when you're finished . . . here's the button—"

The clerk went out. The visor began taking qualitative and quantative pictures of Lawson, stereoscopic and fluoroscopic. It said briskly, with the inflexibly arro-

gant tone of a robot-mechanism, "Full name, please, last name first."

"Lawson, Benjamin."

"Age?"

"Twenty-one."

"Date of birth?"

"April ninth, Twenty—"

Back at local headquarters Ferguson pressed a few buttons, studied a blowup from the "Encyclopedia Britannica" that flipped on the screen, and nodded at Archer.

Archer said, "What's—"

"It's a chemical compound, it says here, made up of carbon, hydrogen, nitrogen and sulphur. Seven out of ten people find it bitter as the devil. The other three find it tasteless. It's a matter of gene inheritance, dominant or recessive."

"Toxic?"

"Anything is, in large enough quantities, including H_2O. People get drowned, don't they? But why put phen . . . phenylthiourea in the city reservoir? Why not arsenic, if he's homicidal?"

"Is he?"

"We don't know yet. We're getting the survey made now. Very odd. Slightly ridiculous. When people try to outsmart ILC, they usually work it out with careful logic, doing their best to cover up what they really intend. This guy Lawson is practically telling us what he's intending. Don't ask me if we'll accept him as a client; it all depends on the survey."

"Kicking a policeman," Archer said dreamily, his face placid and his eyes shrewd. "What else did he have on his list?"

"Here it is on the visor. Peculiar. He not only wants financial coverage, but he wants our scot-free clause. He doesn't want to suffer any legal consequences."

"You arrange that, don't you? You're a Federal Bureau. If he kicks a policeman—"

"If we issue the policy," Ferguson said grimly, "he's certainly not going to be able to kick a policeman. I'll see to that. Maybe this boy thinks he can outsmart ILC, but he's not going to outsmart me."

"A personal matter?" Archer said, looking at Ferguson intently.

"Sure, that's why I'm a socially integrated individual. I can channel my impulses into constructive canals, instead of destructive ones. I'm rather proud of my resourcefulness, Mr. Archer, and proud of ILC. I'm using my mind to its full capacity here—and where else could I do that? Except perhaps as a Fixer."

"Thank you," Archer said politely. "If you can put my mind at rest about Ben Lawson, I'll be grateful. So far it's what they used to call a maggot—a whim. But I've never yet met an altruist who wasn't getting something out of his altruism himself. Lawson—"

But Ferguson was brooding over Lawson as an enemy of ILC. "Phenylthiourea, eh?" he said. "I'll fix his wagon."

The foundations for the Bureau were necessarily laid in Chicago, Alamogordo, and Hiroshima. It was built on the instability of an atom. The Atomic War occurred at the right time and at the wrong

time. If the global warhead had exploded in the mid-forties, the result would have been catastrophe, devastation, and red ruin. It didn't. If it had exploded after atomic energy had been perfected and production methods sufficiently improved and speeded up, the result would have been, in all likelihood, a fine opportunity for future civilizations to develop on the outlying planets, with the Earth as a secondary Sun. The difference was, very roughly, the difference between a pistol with one cartridge in the chamber and a pistol with a full clip. But when the level of world thought had returned to customary post-war standards—meaning a cheerfully optimistic concept that the next dip on the roller coaster either didn't exist or wouldn't come in our time—then presently saturation point was reached. International politics and national economics were going down while atomic science went up. Luckily the bottom was reached before the top. There was an Atomic War, neither as mildly cataclysmic as it might have been in 1946 nor as finally thorough as it would have been decades later. It merely depopulated most of the planet.

But that, of course, was inevitable.

It was also inevitable for the race to rebuild. One advantage of the utter breakdown was the factor that specialization became difficult and union important. Biologists, psychologists, physicists, and sociologists were forced to work together, by virtue of pure necessity. Physically they decentralized, but mentally they became federalists in thought and action. Miraculously, a sufficiently stable world government was worked out. At first it was concentrated in a small area north of Mauch Chunk, Pennsylvania, but it spread. Knowledge of technology still existed, which helped a great deal. But there was the immense problem of rebuilding.

One answer lay in eliminating the difficulty of children. Infanticide would have solved the immediate problem but scarcely the racial one. Having children was encouraged, because of the increase in sterility and freak mutants and the decrease in normal births. Still, it became necessary to solve the vital difficulty of general immaturity.

In a word, not many people continued to mature after they had children. At least one parent began to slow down, never acheiving full mental maturity.

Unlike the gorilla—

For some reason Ferguson felt nervous and expounded at length to Archer, who listened with every appearance of great interest. Perhaps this was because Ferguson himself had now entered into the Fixer's calculations. At any rate, Archer listened.

"Man is immature," Ferguson said. "Any naturalist or biologist can prove that. Or any sociologist, for that matter." He conveniently forgot that his guest owned a degree in sociology. "Our cranial sutures aren't knit, our habit-patterns aren't

adult, the physical proportions of our bodies—well, we're built physically like the immature gorilla. And we act that way, too. We're a social race. We like physical contact, competitive games, horseplay—generally speaking. I'll admit that immaturity is what gives us our drive; we're insecure, so we experiment. The mature gorilla doesn't need to. He's perfectly adjusted to his environment—he's got his feeding-ground and his harem, and about his only real danger is from young bulls who want his harem. He's bad-tempered and perfectly self-sufficient. Lord knows we're not, or we wouldn't throw so many parties!"

"ILC is trying to mature the race," Archer said, half-questioningly.

"Children are a handicap, in our culture," Ferguson said. "The male gorilla drives his kids away when they begin growing. And they can fend for themselves; they're equipped to do that, in the jungle. But civilization has made a deadlier jungle. One that only a nominal adult can cope with. No provision was made for the young of the species; that was left as an individual problem. The result was a culture in which the male was dominant and women enslaved. Oh, very roughly—but rearing children in pre-atomic cities was a full-time job. Wastage!"

Archer moistened his lips.

"Have a drink," Ferguson suggested. "Want to dial me a Scotch and soda, while you're at it?" He waited, watching the great curved sweep of the window. He gestured, and at the signal the soft rhythm of color-patterns gathered like a folding curtain and ran down like water and was gone, revealing the view beyond. The city was small in population but large in area, and there were a great many parks.

This is the way it should be, Ferguson thought. *This is safe.*

So you had a convalescent world—a basicallly healthy organism but susceptible to a good many figurative diseases. People with a susceptibility to cancer should avoid continual irritation of tissue. Cancer is uncontrolled pathological cell-growth. Controlled cell-growth is normal and beneficial. Similarly—atomics.

Avoid irritation.

People, in fact, lived pretty much as they wanted to under ILC. They couldn't have everything, naturally. Neuroses couldn't be eliminated overnight. But the Atomic War was the equivalent of electric shock therapy. *En masse,* ILC used a palliative plan. Individually—ILC insured.

Not everything. There are no Utopias. Even supermen would have superproblems. There was an iron hand, but the velvet glove was the textile people loved to touch. The atomic cancer was arrested by drastic surgery; yet it had filtered through the bloodstream. So, in lieu of a real answer, ILC avoided irritation. ILC kept the world-patient from catching other ailments that might cause irritation. Anything could build to a sociological infection which could in turn make

the cancer break out again. As long as the race was healthy, it was medium safe.

That applied to Greg Ferguson, too.

ILC made certain of that. No irritations would arise for him—the formula said—that couldn't be adjusted. Ferguson was a crooked peg in a crooked hole. Conceivably he was less mature—or, rather, more immature—than most; conceivably he needed the safety-factor, the stability, the certain security which the symbol of ILC represented to him.

In fact, he did need that. Badly.

You can't rebuild the world in a day. There was plenty of technological knowledge, but not many people. That meant an all-out effort. So ILC cut down the factors that retarded maturation. The group had to be large to support research workers not immediately productive, and if one-half of every couple had to rear a batch of children, the potential manpower was halved. So the children were placed in crêches. The young gorilla can survive in a jungle—young children were given the equivalent of a safe jungle. A crêche—and the parents didn't have the responsibility, and could continue their maturing process.

The Federal Bureau of Insurance, Lotteries and Crêches made that possible. It was impossible to finance the crêches by taxation; the government wanted to avoid irritation, not augment it. And the Lotteries helped a great deal, but Insurance was the real answer. It was the place where steam was blown off. It was the answer man. It was where budding neuroses were caught. People take out insurance, by and large, because of neuroses and in the old days they had good reason. Under ILC practically anything was insurable. A man wants insurance against something he's afraid will happen, or something he wants to happen. Often it is a socially or personally pathological matter.

The adult gorilla, however, needs no insurance.

"Here's a case—potential psychosis of a client."

Ferguson shifted a visor screen down. A man's face appeared. He looked normal.

Archer raised his eyebrows.

"He wants insurance against infectious disease," Ferguson explained. "The premium's rather high on that, obviously. We still haven't licked all the mutated bugs, though the race built up strong resistance after the biological battles. But look at his survey and see what you get."

Information fled madly across the screen while Archer waited.

"Well?"

"I don't see anything special," the Fixer said.

"No? You don't see why the guy may presently want suicide insurance?"

"Mm-m. Suicide. Why? He's well integrated. Useful, happy—"

"Any unusual purchases? Try the chemist's list."

"Oh. Green soap. Germicides. A UV portal—"

"Two of 'em, one for his office, one for his home. The guy is working straight toward a lovely case of misophobia. That should mean fear of mice but it means fear of dirt. The rest is routine, for the psych crew. I gather the initial irritant occurred when he was home on a visit from his crêche, as a kid. Spilled some gunk on his sister and hurt her. His parents made the wrong kind of a fuss. He's got a guilt complex. Eventually he may hear voices from the woodwork telling him he's sinned. You see?"

"Ah," Archer said, "does he get his policy—this potential misophobe?"

"Of course. Why not? When he gets his final exam is where the gimmick comes in."

"The hypnosis . . . oh, yes. I'd like to know more about that."

"Well," Ferguson said, "it's the reason why this particular client will be a good risk instead of a poor one. We'll cure him and channel his neuroses at the same time. Barring genuine accident—the percentages will be in our favor. They wouldn't be otherwise, because of the guy's submerged death-wish. Eventually he'd purposely expose himself to some contagious disease, without knowing anything about it consciously. He wants to be punished. Misophobia, ha."

"Report on Benjamin Lawson," the televisor announced.

"Good," Ferguson said. "Shoot it across."

Lawson was twenty-one years and one week old. He was absolutely normal. Even his minor deviations during his training period were merely normal. Had they been absent, that would have been suspicious and worth investigation. All children put frogs in their teachers' desks, provided the frogs are available. Rodents, insects, or reptiles will do at a pinch.

On his twenty-first birthday Lawson had had the choice of several jobs for which he was prepared. His field seemed to be general integration; he had studied everything omnivorously but rather casually. However, he had taken advantage of the month-long vacation period optional to all graduates, and stayed home most of the time, visiting his parents, who were mildly pleased to have him. He read a great many newstapes, and he interviewed a government councilor named Hiram Reeve, suggesting that Reeve introduce an immaturity pension bill at the next session. That accounted for Archer's presence; Archer was Hiram Reeve's Fixer.

"Detail," said the televisor. "Lawson proposed the inverse of an old-age pension. All children would become eligible at birth and continue to draw the pension until reaching biological maturity. Councilor Reeve agreed to present such a bill—"

"But he won't," Ferguson said to himself. "Campaign promises, eh?"

"Within the last two years Lawson has studied these subjects: bio-

ology, mutation, biological time and entropic time, endocrinology, psychology, pathology, sociology, and the philosophy of humor. His studies were intensive rather than casual. There seems to—"

"Skip to his home life, for the last few days," Ferguson requested. "What's he reading there?" He leaned toward the screen, but the instant closeup view made his motion unnecessary. Sprawled languidly in a relaxer, the cheerful Mr. Lawson was immersed in Joe Miller's Joke Book.

Some days later, Lawson called at ILC by appointment and this time he saw Greg Ferguson, who had flown in an hour earlier to superintend the final exams. Certain preparations were necessary. In the

old days, a company might not issue fire insurance on a tenement until the owner put up fire escapes, so ILC stipulated that psychic fire escapes must be built on every client. Moreover, ILC built them.

"You understand, Mr. Lawson," Ferguson said, "the policies become invalidated if at any time you should refuse to return for additional examinations, should we decide they're necessary."

"Oh, sure. That's all right. But do I get my insurance?"

"You want a separate policy to cover each contingency?"

"Yes. If I can afford the premiums on them all."

"You've got twenty-five policies here," Ferguson said. "They cover quite a range. The premiums would vary, naturally. It would be a poor risk for us to insure you against turning your ankle—we'd rather insure you against being rained on, since we can control the weather these days. You've got quite an extreme range here, everything from orange crop failure in Florida to snakebite. Crops don't fail, incidentally."

"Well, not through climatic conditions," Lawson said, "but wasn't there some mutated boll weevils that ruined the cotton in South Carolina a few years ago?"

Ferguson nodded. "You're betting on the chance of a similar mutation hitting Florida oranges, then?"

"I guess I'm betting against chance, in a way. Some of these policies are pretty sure to pay off."

"Do you think so?" Ferguson asked. "Remember, you'll have some heavy premiums to pay—and betting against chance is a dangerous business."

"May I—?" Lawson examined the figures Ferguson handed him. He whistled. "That fifth one's plenty expensive. Why's that?"

"Insurance against your purposely giving somebody hay fever? Difficulty of proof, for one thing, but mainly there are too many virus mutations these days. The allergies are tricky. We'll insure you on that score, of course, but it'll cost you money. Why do you want to give somebody hay fever?"

"I want to be insured *against* doing that, Mr. Ferguson," Lawson said blandly. "But I don't think I can afford that one. Still, the other items—" He computed rapidly in his head. "I suppose I could scrape up first premiums."

Ferguson watched the young man. By now he knew Ben Lawson, inside and out. He knew his heredity and his habit patterns. He knew how and why the client worked. And there was absolutely nothing suspicious about Lawson, except Archer's hunch.

And that wasn't actionable.

So he merely said, "Mr. Lawson, I'm bound to give you a warning. If you can pay only the first premiums, you're going to lose your money and your insurance—unless you take a job and make some more dough."

"Nobody *has* to take a job."

"People get hungry if they don't. Even if they apply for the dole,

they work it out in man-hours of labor."

"Oh?" Lawson said.

"The insurance we issue is sound. We underwrite, and we pay, when required. But I want to warn you that our losses are due almost entirely to the laws of uncontrollable chance. When the personal factor enters into the question—we don't lose. In your case the personal factor applies completely. There's no way in which you could accidentally put phenylthiourea in the city reservoir."

"No way at all?"

"The chances are astronomical. You haven't found a way to upset the laws of chance, have you?"

"Wouldn't you know it by now if I had? You check pretty thoroughly."

Ferguson nodded. "That's correct. If you get at the reservoir, it'll be due to your own personal impulse. You know that's impossible, or it will be."

"Impossible?"

"Nearly so. The hypnosis treatment is more effective than most people realize. We're going to condition you so you *can't* do any of the things you're insuring against."

"Well, that's fine," Lawson said. "I certainly wouldn't want to put phenylthiourea in the city reservoir, would I?"

Watching the young man, Ferguson had an inexplicable moment of *déjà vu*; and he stayed motionless and silent, because he didn't like such things, and let free association—by which is meant selective association—flow through his mind. Presently he had it, though he had to go back to the days of his gauche adolescence. It was very much like the times when he was in an Upper Crêche, immature, facing an adult who made him feel awkward and ignorant—an adult who knew so many more of the rules than he did.

He studied Lawson. There was nothing overt to account for this—except the equivalent of the curious behavior of the dog in the nighttime. Lawson wasn't apparently up to anything. Lawson seemed to feel perfectly at ease. And even though the hypnotic treatment was guaranteed, including the inevitable margin for error, Ferguson felt a slight qualm near his liver. His solar plexus. The great nerves gather there, working in harmony with the brain-mechanism that was government *per se*—and so Ferguson sensed a threat and that hinted at an opening abyss at his feet.

ILC was the cornerstone. The alternative was the only real personal devil that had ever been created—the threat of uncontrolled atomics. But then sanity and logic, which have betrayed so many people in the past, came back, and he knew that one man couldn't upset the applecart. Especially this wide-eyed youth.

Cocky fledgling. He'd just broken the shell of his crêche egg. Naturally he felt competent to cope with anything. He'd always coped with whatever had existed within his eggshell. But that shell had been a barrier, keeping the wrong things out.

"There is one point," Ferguson said. "Your dreams."

"What about them?"

"Our experts have queried that angle. Especially the hypnogogic visions. But up to three years ago your recorded dreams followed a regular pattern, with variations. Since then—"

"They don't?"

"Oh, they do. They follow a pattern. But *without* variations."

"That just means I'm a type, doesn't it? A real norm?"

Ferguson scowled. "The norm's an arbitrary figure. Are you trying to kid me?"

"I'm sorry. I underestimated you. I know the theoretical norm would be pretty much of a monster. It's a handy semantic term. Even if norms exist, they can't stay that way under environmental pressures."

"So. Either you've been lying about your dreams for the last few years, or you haven't."

"Nobody's complained."

"People look for different things. In the crêches they look for one thing. Here we look for another."

"If I'm a bad risk, you can turn me down."

"Oh, no," Ferguson said flatly. "We seldom turn down a client. We allow margins; we pay off when necessary. We insure. If we could control the uncertainty factor, we could just charge a flat sum to work miracles. As it is, in the majority of cases we don't have to pay off. Because we have our hypnotic treatment as extra insurance—our own. But when we do pay, we want to know why. We've got a close schedule of statistics, and they have to check. Apparently you're not antisocial. You've no latent criminal tendencies that we can discover. You're a normal man for your age." Ferguson stopped, a curious qualm going through him at his own words. He realized that he didn't believe what he had just said. He *knew,* with a flat, impossible conviction, that Lawson was not—*normal.*

There was no evidence. Not even the item that had brought Archer in on the case. Suppose, Ferguson thought, he should ask Lawson, "Why did you request Councilor Reeve to back an immaturity pension?" He would get an answer, but not a satisfactory one. For Lawson would not have profited by such a pension. He was legally, mentally, and physically mature. So his plea to the Councilor had been, apparently, simple altruism, and far from logical, since the young of the species already had the equivalent of an immaturity pension under the present system.

Ferguson listened with detachment to the new note of annoyance in his own voice.

"Sometimes people think they can swindle ILC," he said. "They never succeed."

It was a key word he had thrown. Ferguson waited. The young man grinned.

"It seems to me," he said, "that you take yourselves awfully seriously, if you don't mind my saying so. If I'd plotted out a solemn method to fake an accident or something, you wouldn't have bothered.

As long as life is real and earnest, you don't object, but one touch of humor and you think I'm going to reach CM and explode in your face."

Ferguson tightened his mouth. After a moment he said, "We'll take a chance. What policies do you want?"

"Well—I think we'll forget about these three. The premiums are too high. I'll take the rest—twenty-two policies, I make it. All right?"

"You can afford to pay two premiums on each, then—exclusive of the three you've thrown out. Why not choose fewer, so you can be sure they won't lapse before you get a job?"

Lawson said. "Well, if I picked two or three and they paid off, I couldn't get the others afterward at the same rate, could I?"

"Obviously not. We'd have to allow—"

"I'll take them all, then, except the three I can't afford."

"Thank you," Ferguson said, but he didn't mean it.

"It's perfectly obvious what he intends to do," Ferguson said. "He'll try to get us to pay off on one policy so he can continue to pay all the other premiums. And whenever his bank account runs low, he'll cash in on another policy. Kick a policeman or something. What a low idea of humor."

Archer took a long time to answer. He closed his eyes, apparently considered the whole problem, opened them again, and inquired, "Do you staff officers in ILC have psychiatric checkups?"

"Now I'm crazy. Is that it?"

"It's easier to believe that than to think one man could upset your whole organization so easily. Why jump to the unlikeliest conclusion before you've checked on the likelier ones? I know ILC has paid off on insurance before, but always in line with the law of averages."

They were in Ferguson's office overseeing Lawson's hypnosis, which, according to the visor, was progressing according to schedule. So far there had been no hitch. Lawson was a fair hypnotic subject, even without the drug. He had gone into test catalepsy, and reacted in a normal manner. He had gone through the usual routine of firing a blank cartridge at a psychiatrist, which might have meant that (a) he was homicidal, or (b) he unconsciously realized the gun was loaded with blanks, or (c) he abhorred psychiatrists. Rechecks indicated that the second was true. He had also been instructed to swipe a dollar from an attendant's pocket, and that meant nothing either. Barter is the basic; currency is necessarily a symbol, and what a dollar meant to Lawson was difficult to discover.

Psychiatry is as exact and inexact a science as mathematics. Once you realize that it's possible to create a whole new system of mathematics at need, you realize that ordinary math is accurate only when the rules are followed. But if you use the rules of one system to solve the problems of another

system, there may arise some difficulty. The psychiatrists working on Lawson were not bollixed, but Ferguson thought they might not know it if they were.

And yet he had nothing to work on except a hunch.

Hunches are exact sciences, though, once you get away from fairy tale concepts. So-called prescient dreams can be accurate. A wish-fulfillment dream may certainly be prescient; it's at least a half and half gamble. Ferguson's hunch came from his unconscious, which had the hopes and fears of all his years. He had achieved security against tremendous odds, for in the Twentieth Century he would have been a miserably unhappy specimen. To him ILC symbolized security, which he vitally needed. A threat to ILC was, very definitely, a threat to himself. And, like most other men, he had the buried nightmare psychosis of the ultimate chain reaction.

ILC did mean status quo, in a way. The people in charge allowed for stress and strain and flux, of course; environment makes a vast amount of difference in precision measurements—of metal, for example. If you kept the human race in a vacuum under glass, status quo would be practicable. As it was—

"He makes me nervous," Ferguson said inadequately. "A hunch is no evidence, but—"

"What's the matter? Think he's a superman?" Archer asked ironically.

Ferguson considered his nails. "You're not serious."

"Well—it's unlikely."

"I've done a lot of research from time to time on just that subject," Ferguson said. "Sometimes I've wondered . . . Why the devil are *you* checking up on Lawson if you're so sure he's harmless?"

"I don't take chances. A good Fixer is like an aneroid barometer. Sensitive. I've got certain specialized training and skills. When there's the equivalent of a variation in atmospheric pressure, I notice it, and I like to find out what the cause was. I've been on a lot of wild-goose chases, but—I don't take chances."

"It's no coincidence that we're working on the same problem," Ferguson said. "You noticed the result and I guess I noticed the cause. We've each got a directional fix on Lawson—he's the cross-bearing. Like a storm brewing in the Antarctic. It's as though you noticed a falling barometer in Wisconsin while I noticed a thermal at the South Pole. Well—Lawson makes me feel funny. And Lawson asked your patron to back a bill, which is where you came in. Hiram Reeve must have had a lot of screwball bills proposed to him before this."

"But never altruistically."

"What—never?"

"I meant never. Sometimes you have to dig deep to find the payoff, but it's always there. There's compensation involved, always, psychologically anyway. You'll find that disinterested reformers aren't as disinterested as they appear—if you check up on their personal warps. People who want to save

the world, Mr. Ferguson, generally have a plush-seated throne picked out for themselves in the brave new one. But Lawson's proposition was apparently altruistic, and I want to make sure he had a selfish motive for proposing his immaturity pension idea. Then I can relax."

"It's just a job to you, then?"

"I like to do my job. That's why I'm working for Reeve—he's the most competent politico around. If there were a better one, I'd change allegiance. But right now—apparently I'm looking for normality in Lawson and you're looking for abnormality."

"He's normal," Ferguson said. "Notice that reaction chart."

They examined the televisor. Lawson was being conditioned against kicking a policeman.

"Will it work?" Archer asked.

"Impossible to tell. We depend a great deal on implanting fear of consequences. But we insure against consequences. In lab conditions, Lawson might very well refrain from kicking a policeman, because he unconsciously knows he wouldn't get his policy if he did. But once he's insured—the policy guarantees against consequences. There's always a margin for error."

Across the screen moved a jiggling green line that meant Lawson refrained from kicking the equivalent of a policeman.

Three days later Lawson threw phenylthiourea into the reservoir. He did it within range of one of the watchdog telephoto lenses, set up in a ring around the water supply, and first he held up the labeled bottle so there would be no mistake. Thereafter he laughed hilariously and went away.

"I want protection against a homicidal impulse," Ferguson said to the ILC psychiatrist. "Probably it's got a paranoid base. There's a client out to git me."

"Out to git you, is he?" the psychiatrist said. "What's he been up to?"

Ferguson told him. "There's nothing yet," he ended. "Not even a neurosis, as far as I know. But I worry about the guy. He's taken out twenty-two policies, and—I'm afraid of how I may start to feel later."

"Identification with ILC. I expect we can get rid of that feeling. Sublimate it or something. Remove the cause. Oh, well. One swallow doesn't make a dipsomaniac. We'll put you through the routine, Ferguson."

"I keep thinking of mature gorillas. A nice therapy would be for me to take a hunting trip and shoot male gorillas. I don't know. This could lead to claustrophobia and agoraphobia. Fear of open spaces, I mean, not fear of crowds. Then I'd have to spend my time like those figures in one of those little houses that foretell weather. Keep dashing in and out. What about a nice padded cell with walls that expand and contract?"

"What about a sedative?" the psychiatrist countered. "The trouble with you staff boys, as a matter of fact, is that the minute

you get a hangnail you think it's a major psychosis. These minor things generally adjust themselves automatically. We keep complete, up-to-date charts of all the staff, and we know a great deal more about you than you think. You're all right. Just to keep you happy, we'll go through the routine and make sure you're not a lycanthrope —though you wouldn't be holding down the job you do if you hadn't achieved integration."

"But what about Lawson?" Ferguson inquired plaintively.

That was, of course, already taken care of. Naturally ILC called Lawson in for re-examination. He came willingly enough, apparently suppressing a mild amusement at the whole proceeding. Ferguson had a deep-rooted conviction that the psychiatrists would discover nothing. All his old qualms and fears combined to tell him that whatever Lawson had was beyond the range of ILC's precision instruments to discover. The only real way to detect his variation from the norm would be to correlate the effect he had on other bodies—the way Pluto's existence was suspected before it was actually discovered.

But Lawson's psychological pattern came safely within the extreme range of normality.

He had a high resistance-quotient; so had many other people. Repeated treatments of sodium pentothal failed to break down all his barriers—that wasn't a wholly unfamiliar phenomenon. He lay on the couch, doped with the hypnotic drug, and answered questions in a way that entirely failed to satisfy Ferguson.

"How did you feel when you threw phenylthiourea into the reservoir?" they asked him.

"I felt good," Lawson said.

"Did you remember that we had agreed you couldn't throw phenylthiourea into the reservoir?"

Silence.

They repeated the query.

"No," Lawson said.

"Could you kick a policeman?"

"No."

There wasn't much they could do about it that hadn't already been done. They gave him supplementary hypnotic treatments, reinforcing the conditioning even more thoroughly than before. But he was written down under Margin for Error. He was a rare type, yet he came within the limits of normality. If he had extensions beyond that norm—the psychiatrists couldn't detect them. Ferguson thought he had. Convincing other people was another matter. ILC had quite as much evidence on its side as he had on his—if you could call it evidence. Apparently it wasn't. And the points that really convinced Ferguson himself were intangibles, on which he could produce no evidence at all. Sometimes he himself felt doubt, but in the end he always swung back to the blind, illogical conviction that was part of his mind by now. Hypersensitivity? Was that the answer? He had for many years been interested in the subject of the theoretical superman, and there had been times

when, looking askance at someone or other, he had wondered—

But never before had he felt conviction. With a part of his brain that seemed to be as specialized and infallible as radar—a sensitivity apparently only he possessed, he *knew*. He had always, deep within him, expected that some day the theoretical would become the practical. Now he thought that it had happened. But how could he convince anyone who did not already have this same conviction springing from an inner perception to which even he could give no name? He might as well announce the second coming of the Messiah. People would dismiss him as a crank, at best. Public disbelief would in effect invalidate the truth—if it were true. There had never been but one man who could safely have claimed to be Napoleon—and even he, without sufficient evidence, might expect to be certified. Before the time of Galileo, Ferguson told himself, there must have been a number of lunatics who, among their other delusions, were convinced that the Earth went round the Sun.

Margin for Error would not exist if a good many people did not fall into that particular classification. To choose one case arbitrarily looked like simple eccentricity on Ferguson's part. He had no arguments anyone could understand. He was a pre-Galilean convinced of the Earth's orbit. And he had no telescopic apparatus an ordinary human could use.

What could he do about it?

Only what he had already done.

The psychiatrists could help up to a certain point—the limit of visibility on their figurative telescopes. But he dared not tell them all he suspected, for fear of being tagged as a psychotic himself. In effect he had to psychoanalyze himself, a notoriously difficult task—and try to segregate and analyze the nameless, certain sense that told him what Lawson was.

Meanwhile Benjamin Lawson went placidly about his business.

Having latched on to a good deal of money from ILC, as the result of his escapade at the reservoir, he deposited it with an investment broker and rented a small cottage fully equipped by Services. He seemed to want to avoid responsibility. There was an odd air of *playing* to his life. Food, prepared and hot, arrived, a week's supply at a time, and Lawson had only to push a button, make his selection, and eat. Then he pushed another button and the service disappeared for automatic cleansing. Since the house was functional, there were no dust-catchers, and air-conditioning and electronic gadgets took care of the inevitable filth that occurs everywhere except in a hard vacuum. There was a playground-resort a few hundred miles away, and Lawson often flew there to ski, play tennis, have a vigorous game of skatch, or swim. He bought thousands of books and book-reels and read omnivorously. He had a chemical laboratory and other laboratories, all purely ama-

teur. He had a great deal of fun making soap, and only the chlorophyl-deodorizer-units saved the bungalow from becoming a stench and an abomination.

He didn't do any work.

A year later he kicked a policeman. His money was running low.

Ferguson was doing pretty well. A hitherto-unrealized psychosis had been uncovered, involving a forgotten infancy-wish for the moon; and by a remarkable series of associations, involving green cheese, butter, and bread, it had resolved itself into the father-image, which was familiar enough to be handled by even the stupidest psychiatrist. Ferguson called on his father, an ancient and unregenerate oldster who spent most of his time collecting dirty limericks, and was conscious of no particular reaction, except a feeling of mild boredom when his antique sire insisted on repeating every limerick he knew at least three times. He was left with a conviction that his father needed psychoanalysis, and he went back to work mentally cleansed and integrated, he felt.

Then Lawson kicked the policeman.

"But that was over two years ago," Archer said into the televisor. "I remember you were all steamed up about it then. Still, it's been two years! Lawson hasn't collected on any more policies, has he?"

"That's not the point," Ferguson said, a muscle in his cheek twitching. "Everyone but me has forgotten about Lawson—he's down in the files as just another case. I called to see if you'd lost interest, too."

Archer made a noncommittal sound.

Ferguson looked at him across the miles. "I'd be willing to bet," he said, "that you've got Lawson's name on your calendar for a future checkup."

Archer hesitated. "All right," he said. "You win. But it's simply routine; I've checked on him every six months. I do that with a good many people—I told you once I don't take chances. Luckily I've got a competent staff, so I can afford the time. But it's just routine."

"It may be routine with your other cases," Ferguson said, "but don't tell me it's only that with Lawson."

Archer smiled. "I know you've got a phobia about him. Is there anything new?"

Ferguson looked thoughtfully at Archer, wondering how much of his motive he should reveal at this time. He decided to stick to the facts.

"You know what I believe, Archer. I haven't any proof. He has been careful never to do anything that would give him away. Neither has he shown any indication of what he intends to do when he does use his—powers. I think I've found out why."

"Could it be simply because he's a normal man without any special powers?" Archer asked gently.

"No, it couldn't! I'll tell you what it really is. He's still a child."

"At twenty-three?"

Ferguson smiled. "Do you know the ages of all your routine cases that well?"

"Well, go on," Archer said, shrugging.

"I've been studying his case very thoroughly. I've made charts and graphs from the information I've gathered, and I've showed them to specialists. I've got opinions and I've made comparisons. Lawson's activity-patterns are those of a twelve-year-old child—with variations. Intellectually he's not twelve years old, but his recreations—his periods of relaxation, when the intellectual centers of the brain aren't exclusively in control—that's when the important factors begin to show. He thinks like an adult, but he plays like a child. It's delayed maturation; it must be."

"So you believe he'll turn into a superman when he grows up?"

"That's why he went to your patron Reeve when he graduated from his crêche. It's the immaturity pension angle. He wasn't as altruistic as he seemed; by his own standards he was immature at the time. He still is. He's simply waiting until he grows up."

"Then what? He'll conquer the world?"

"I think he could if he wanted to." Ferguson considered Archer's face on the screen. "Well?" he said.

"What do you expect me to say to that?"

"I'm waiting for you to cross Archer's name off your list. If your only interest in him has been curiosity about the altruism angle, you can check him off as of now. Are you going to?"

Archer paused a fraction of a second too long before he said, "Sure."

"That means you're not going to. You're too accurate a barometer to dismiss me as a crackpot entirely."

"You keep leaving me with nothing to say except go on."

Ferguson said, "I've got a phobia, I'll admit that. I've been living with it for a long time now. I don't like it. It's like living with one leg and no prosthetic device—I can get used to it, but my own adjustment won't help the rest of the world. I'm going to make Lawson furnish proof that will convince you and everybody else that he's—what he is. I'll need your help. He's made some good investments. That's why he hasn't yet needed to collect on any of those other policies he got originally. I'm beginning to think he took out so many just to disarm suspicion, so he could remain within the margin for error if he had to break two or three. He's broken two. He's been investigated. If he broke a third, I think other people besides me might begin to worry and wonder. I want him to break another. It's time people did begin to worry. This is where you come in. If Lawson's investments went wrong, he'd need more dough. I want them to go wrong. That's more your line than mine. What do you say?"

"What's in it for me?" Archer asked.

"You can stop worrying about

that memo on your calendar—one way or the other. I promise that if nothing happens I'll never bother you again about it." That was the end of what Ferguson said aloud. In his own mind he finished the sentence. *"—but I won't have to. Lawson will!"*

Lawson was not likely to take that lying down. Ferguson did not expect vindictiveness from the boy; Lawson would be above petty revenge. But he could not afford to let a thing like this happen unchecked; Ferguson meant Lawson to know that this was a deliberate

attack. And if Lawson was what Ferguson believed him to be, he could not afford to let the knowledge of his superior potentialities be spread abroad. If guns are being fired at you, you spike those guns. There need be nothing vindictive about it—but self-preservation must be as strong in the immature superman as it is in any other organism.

One of two things would happen; Lawson would collect on another policy, which would put him perilously close to the outside limits of Margin for Error. ILC would worry and wonder, remembering the suspicions Ferguson had already planted. Lawson could scarcely afford to break his hypnosis a third time openly. The alternative could only be an overt retaliation on his attackers; that was what Ferguson hoped for with part of his mind. It would be the more certain way of proving his case. And Archer had to be in on it. In a perfunctory way Ferguson was sorry he had to drag Archer into this. He would have had no objection to staking himself out alone as bait for the tiger if it would do any good. But no tethered goat has ever killed a tiger yet, alone. Ferguson had already established himself too firmly as a crackpot in the minds of those whose opinions mattered. If he could pull Archer down with him, Archer would have to fight back against the superman, or go under. Corroborative evidence from a man like Archer would have some weight with the authorities.

Ferguson watched Archer's face anxiously. He saw the decision hang in the balance for an interminable chain of seconds. Then Archer nodded.

"I'll see what I can do," he said.

Ferguson let out his breath in a long sigh.

The ease with which Lawson thought of a third alternative was infuriating. He did neither of the things Ferguson expected. Instead, he took out insurance on the *Nestor*, a luxury liner on the Earth-Moon run, and since a great many people wanted similar policies—it was almost a lottery, in view of an epidemic of meteor swarms—no attention was aroused at ILC. Besides, the usual margin for error had been allowed. The *Nestor* blasted off three days after its announced time for departure, which gave it a sufficient safety factor and caused dozens of people to cancel their policies.

So the *Nestor* avoided the meteor swarms, but ran into an atomic warhead which had been orbiting in free space for years, awaiting the fatal appointment.

The *Nestor* was running on atomic fuel. The great ship blazed white for an instant and disintegrated.

So did Ferguson. Not literally, of course; not with the spectacular finality of the ship.

Perhaps the worst part was the waiting. He was almost certain that Lawson knew what had been intended, and why, and who was responsible.

But nothing happened.

There was no yardstick. Ferguson didn't know what to expect because he didn't know Lawson's limitations. Ferguson might, unknown to himself, be walking straight toward an apparently accidental demise, hours or days from now, as final as that of the *Nestor*. It seemed fairly obvious that Lawson had foreseen that final rendezvous between the ship and the wandering warhead in its orbit. Was there a rendezvous ahead for Ferguson? Or was he being ignored? He didn't know which thought he liked less.

His work began to suffer. He wasn't eating well these days, which might have brought on his headaches. He overheard his secretary complaining that he was developing a temper like a bear, but he knew that was the wrong simile; the adult gorilla exhibited tendencies more like what Ferguson was feeling now. Irritation, a desire for solitude, above all suspicion. It was the suspicion that bothered him most.

After he had made the third major mistake in a row in office routine he took a vacation by request. He was more glad than sorry when the request came through—not that he thought a vacation would help to solve his problem—you can't negate a fact like Lawson by ignoring it—but he was at least relieved of the troublesome suspicion which had been developing to major proportions of late.

He was suspicious of new clients. He kept remembering Lawson's aggressively normal face and manner in their first interview. And now he read behind every application the potential for—

A second Lawson.

For six months he tried to run away from a nightmare. The Himalaya Playground didn't help. Specialized occupational therapy didn't help either. Nor did the Moon. Ferguson found the satellite bleak and unfriendly, even at the stimulating Shady Glen north of Tycho. When he looked up at the clouded disk of Earth in the sky, he kept thinking the masses of light and dark had the shape of Lawson's face. It covered the whole planet, just as the shadow of Lawson had covered all of Ferguson's life by now. Lawson watched him unwinkingly from above.

Time on the Moon has a different quality from time on Earth. He had to count up laboriously sometimes to discover how long it had been since he left ILC. He had a reason for wondering, because there was a message he expected. A message from Archer. Before he left Earth, he had asked Archer to notify him in case anything developed. A good many months must have gone by, though here on the Moon they didn't seem so long. But no message came.

When he saw the dull colors of winter spreading down from the pole, he knew his six-months' period was up and he would have to think about going back soon. And now he had to face it; he was afraid to go back, until he heard from

Archer. Eventually he undertook the considerable expense of a person-to-person call. It was not, after all, an expense. The call could not be completed. Archer had disappeared.

It was hard to check from this far away, but apparently the Fixer's office had been closed some months ago, and there was no forwarding number. By the time Ferguson's reservation for the return trip came up, he knew what he had to do.

If he had gone straight home, things might have worked out quite differently. But at that time of year the space liner was operating between Tycho and a port in South Africa. An old compulsion which had been haunting Ferguson for some time now saw its chance and broke out of all control.

For a long while he had wanted very much to kill a gorilla. It was not as irrational as it sounded. Psychiatrically speaking, he knew it involved symbolism and displacement. Emotionally, he knew what face he would see across the sights of the gun when he found his gorilla. It had to be an adult male.

With all the resources of his time, this wasn't difficult to arrange; but the disgraceful ease with which the telephoto analyzers located a specimen, the simplicity of driving the sullen brute into an ambush with supersonics, the facility with which Ferguson, in his fast armored Hunter, shot his quarry, left the man completely dissatisfied. Men had killed gorillas before. It proved nothing. It didn't prove the point that bothered him.

Sight and memory of the gorilla's face, in death, stayed with him. The monster had been mature, for his species. Antisocial and dangerous. But dangerous only to whatever intruded into his domain.

With a mature superman, Ferguson thought, human progress might stop. A superman would not feel insecurity, that goad which has always driven mankind. A superman would be a law unto himself. Would he behave like an anthropomorphic god, lending a helping hand to Homo sapiens, or would mankind seem to him as alien and unimportant as a savage tribe?

Lesser breeds without the law—

But the world belonged to man. Not to Lawson. ILC was the law. ILC was the fortress. Without ILC's stability, there would be no protection. *I'm not safe any more,* Ferguson thought. *I could never stand alone. Maybe that merely means racial immaturity; ILC does stand in loco parentis, but it's always been that way—man has always wanted an All-Father image—*

Ferguson turned in the rifle, but he kept the pistol.

There was no difficulty about locating Lawson. He still lived in the same cottage. But he seemed to be looking slightly older. He nodded cheerfully to Ferguson when the latter came in.

"Hello," he said.

Ferguson took out the gun and aimed it at Lawson.

Lawson looked scared, or pretended to.

"Don't," he said hastily. "I can explain. Don't shoot me."

His apparent fright was the only thing that stopped Ferguson's finger on the trigger.

"You don't need to be afraid of me," Lawson assured him in a soothing voice. "Please put down that gun."

"I know all about you. You're dangerous. You could conquer the world if you wanted to."

"I doubt it," Lawson said, his fascinated stare on the gun-muzzle. "I'm not really a superman, you know."

"You're not ordinary Homo sapiens."

"Now look. I know a good deal about you, too. You could hardly expect me not to after what's happened. A man's investments don't all go haywire at once unless somebody's been manipulating the market against him."

"So that's what happened to Archer." Ferguson's voice rose. "I suppose I can expect the same thing, whatever it is."

"Archer? You must mean Reeve's Fixer. So far as I know, he's going about his business as usual." Lawson was eying his adversary warily. "You're the problem right now," he said. "You're not going about *your* business; you're going about mine. I wish you'd lay off, Ferguson. I know what you're thinking, but honestly, I'm not doing anyone any harm. Maybe you have reason for some of your conclusions about what you call my super-powers, but there's nothing miraculous about them. It . . . it's just—"

"It's what?" Ferguson demanded as the other man hesitated.

"Call it a—way of thinking. That's as close as I can come to explaining what it is I've got. I just don't make mistakes. Not ever."

"You made one when you let me come in just now, with a gun in my pocket."

"No, I didn't," Lawson said.

There was a pause.

He went on: "Suppose I tell you a little about it. You were partly right, you know, in what you've been saying about me. I am immature. Normally, I'd never have known I wasn't mature at twenty-one. There weren't any standards of comparison. But this—thing—in my mind helped there. It isn't prescience, it's just a . . . a way of thinking. You might call it precision and knowledge of precision tactics. An ability to disassociate the personality from pure thought. I can disassociate logic from emotion, you see—but that's only part of it. Before I graduated from the crêche, I knew it would take a good many years before I really matured."

"You're not human. You don't give a care about human beings."

Lawson said, "Look at it this way. Long ago, there was child labor. Kids were put to work in mines and factories when they were ten—or even before that. How could they reach normal maturity under those conditions? They needed normal childhood, with the

right facilities. I had the same problem, with a maturation delayed years beyond the time of everybody else. I couldn't take a job—any job. I could have coped with the requirements, of course, but it would have—warped me. Even before I got my particular ability fully developed, I had a sort of protective instinct pointing out the right direction to take—generally. Just as a new-hatched chicken runs from danger. I *needed* a normal childhood—one that would be normal for me."

"I suspected what you were."

"Because of what you are," Lawson said gently.

Ferguson blinked. "You're antisocial and dangerous," he said. "Your record shows that. You wrecked the *Nestor*."

"You know better than that. You're trying to make me a personal devil."

"You insured the *Nestor*, and the *Nestor* ran into an atomic warhead in space. What about logics of probability?"

"What about logic?" Lawson countered. "I can think and integrate without emotional bias when necessary, that's all. It's not prescience. It was a matter of hard work, research, astronomy, historical study, and integration. I found out the exact time of the *Nestor's* departure, I found records of spaceships that had noted radiations in certain areas above the stratosphere. I checked on what atomic shells were fired during the Atomic War. I don't think any ordinary human would have had the patience or the speed to do the integration I did, but—it's simply hard work, plus extensions of the brain that have always been shackled before."

"You can foretell the future?"

"Given the factors, I can formulate the probable final equation—yes. But as for this special talent of mine—I can't tell you. All I can say is that technology has its limits, but the human mind hasn't. We've gone tremendously far with technologies—so far that we nearly killed ourselves with atomics because we didn't know how to use nuclear fission. But every weapon creates the man to use it—and to hammer it into a plowshare. I'm a mutation. Eventually we'll know how to handle atomics without danger—"

"*We?*"

"I'm the first. But there are others like me in the crêches now. Immature as yet. But my brothers will grow—"

Ferguson thought of the gorilla.

Lawson said, "I know how to think. I'm the first man in the world who ever knew how to do that. I'll never need a psychiatrist. I don't think I'll ever make a mistake, because I can really think impersonally, and there's nobody who's ever been able to do that before. That's the basis of the future—not technologies that people misuse, but people who can use technology. Right now, there are over eighty children in crêches who have that special factor for logic in their minds. It's a dominant mutation. We don't want to rule;

we'll never want that. It's only autocrats who need power—those who tag groups as 'little people' so that by comparison they'll be big people. My job, just at present, is to see that my brother mutants get the immaturity pension they need. I must provide that money somehow. I can do it; I've worked out some methods—"

"Nevertheless I'm going to kill you," Ferguson said. "I'm afraid of you. You could rule the world."

"Madmen rule," Lawson said. "Sane men work, directionally. Atomics have to be controlled; that's one step. It takes pure, sane thought to handle that. And I'm the first truly sane man who has ever existed on Earth."

"Like that gorilla I shot yesterday? He was integrated. He was vicious and touchy and static. He had his feeding-ground and his harem, and that was enough for him. He wanted no progress and needed none. That's maturity for you. Progress stops—the world stops. You're a dead end, Lawson—and in a minute you'll just be dead."

"Do you think you can kill me?"

"I don't know. Probably not, if you're a superman. But I'm going to try.'

"And if you fail?"

"Probably you'll kill me. Because if you don't, I'll spread the word, and you'll be lynched—some day. At least, I'll talk. If that's the only weapon I have against you."

"Animals kill," Lawson said. "Men kill. I don't kill."

"I do," Ferguson said, and squeezed the trigger.

Nothing happened.

When the room steadied about him again, he was seated in a deep chair staring at the gun on the floor where he had dropped it. For the moment it didn't matter why he had failed—why the gun had failed. The fact of failure was enough.

Lawson had been intolerably kind. He had a vague feeling that Lawson had gone away somewhere to fetch him a drink. His time-sense was unsteady again. Perhaps that was because he had so newly returned from the Moon. Whatever the reason, his sense of urgency was gone.

Then on the wall he saw the television panel, and an urgency woke again in him in a new direction. Archer. Archer could give him the answer. If Archer were still alive.

With no recollection of motion he found himself before the screen, steadying himself with braced hands on the base, giving the familiar call number for the office where Archer no longer worked. He got from the exchange the same information his lunar call had elicited—office closed, no forwarding address. He tried Archer's home, with the same lack of result. Then he tried the office of Hiram Reeve, the politician who had been Lawson's patron, and here he found the right answer.

"ZX 47-6859. That's a private number, Mr. Ferguson. ILC will keep it confidential, of course?"

Ferguson promised, and blanked

the face out quickly. His voice was a little unsteady as he repeated the ZX number. It seemed incredible that Archer's plump face should dawn so clearly and promptly in the screen. Ferguson had pictured him as dead or destroyed in some subtler way, with so many vivid variations as applied to himself, that he tried stupidly to reach out and touch the screen for reassurance. The surface was cold and smooth beneath his fingertips, but Archer jumped back and laughed, putting up a futile hand to shield his eyes from the imagined blow.

"Hey, what's the idea?" he demanded.

"Are you all right, Archer? Where are you? What's happened?"

"Sure I'm all right," Archer said. "What about you? You don't look too good."

"I don't feel too good. But I've got proof. He's admitted it!"

"Hold on a minute. Let's get this straight. I know you just got back from the Moon, but—"

"I'm at Lawson's house. I've confronted him with the evidence." Ferguson made a great effort and forced his mind into co-ordinated thought. So much depended on what he was able to put across in the next few sentences. He could not afford weakness yet. "Lawson's admitted everything I've been telling you," he said. "It was all true. For a while I almost thought I was going crazy, but now Lawson admits it—listen, Archer, he admits it! You've got to help me! I realize my record's bad—I knew, but I couldn't convince anybody, and it nearly drove me off my rocker. I suppose I've been sounding psychotic for a long time now, but they'll listen to you. They've got to—because I tried to shoot Lawson, and I couldn't. Somebody will have to do something quick." He paused, drew a deep breath, and said harshly, "There are eighty more of *them*. Do you hear that, Archer? They're growing up. They're going to take over. I know how that sounds, but you've got to believe me. Give me a chance to prove it! Could you get here fast? How far away are you? It all depends on you; Archer, please don't fail me!"

Archer smiled. It was borne in upon Ferguson's mind that he looked like a different man now. Somehow in the last six months he had shed his reserve, his wariness, and seemed completely relaxed and confident. But a slight shadow darkened his look of jovial content when he answered.

"I can get there right away," he said. "Hold on." He turned away from the screen. Ferguson saw the back of his head as he crossed the room and opened a door in the far wall. He heard the door open. Beyond the opening door he had a brief glimpse of a tiny, distant room in which a tiny, distant man stood with his back to the door, looking into a televisor screen. Very small and clear on that miniature screen he saw a miniature duplicate of a man opening a door upon a room in which a man stood facing a televisor screen—

It was the sound of the opening

door that rescued him from the plunge through abyss after diminishing abyss of infinite duplication. He heard the door opening twice, once in the screen and once in the wall behind him. When he turned, Archer was crossing the threshold.

This time it was a long while before the room stopped turning. "I'm sorry," Archer said. "I should have warned you. I guess I just didn't think. Things have been happening pretty fast around here."

"What things? What happened? What are you doing here?"

"I work here," Archer said.

"You—*work here?*"

"I've changed my patron. No law against that, is there? I worked for Reeve as long as I thought he was the best man. But now I'm working for Ben Lawson. He's the best—man."

Ferguson made an inarticulate sound. "You traitor," he said wildly.

"To what?"

"Your own species!"

"Oh, very likely," Archer said blandly. "Still, I know where I'm most useful. And I like to be useful. It's none of our business to sit in judgment, is it?"

"Of course it's our business! Who will if we don't? I—"

Archer interrupted. "It doesn't matter whether we do or don't. You saw what happened when you tried to shoot Lawson."

Ferguson had entirely forgotten the pistol. Now he crossed the room unsteadily, picked it up, and broke it open. The cartridges were blanks.

"All hunters are required to return their weapons after they've come back from expeditions," Archer said pedantically. "ILC's policy is to avoid irritation, so nobody tried to take that pistol away from you at Uganda Station. However, blank cartridges were substituted. Lawson knew what would happen. It took him seven hours of fast calculation and logic to work out the inevitable probability, including the psychological factor that involved your personal reactions—but you see the result. You can't kill him. He can always work out what's going to happen."

"Man, you can't—" Ferguson found himself becoming incoherent. He stopped, drew a painfully long breath, and began again, with an attempt at control. "You can't be such a fool! Maybe I've failed to kill Lawson—alone. But that doesn't mean that both of us, together . . . the resources of ILC . . . the whole human race would band together to destroy Lawson if they knew—"

"Why should they destroy him?"

"Self-preservation!"

"That instinct failed the race," Archer said softly, "when it made the first atomic bomb. Status quo is only a stop-gap. The single answer now is not a new control for atomics, but a new kind of man. A mature man."

"The mature gorilla—"

Archer interrupted. "Yes, I know. You've had that phobia in mind for a long time. But you're

thinking like an immature gorilla yourself, aren't you?"

"Of course I am. The whole race is at that stage. That's what frightens me. Our entire culture is based on progress rising out of competition and co-operation. If a really mature mind should take over, all progress would stop."

"You really don't see the answer to that?" Archer said.

Ferguson opened his mouth for what he realized would be only repetition. He wasn't getting anywhere with Archer; he was making no impression. All he could do was repeat what he had already said. "Like a child," he thought wildly. "Repetition, not logical argument. Only—"

They could no longer communicate with one another. It was as though Archer had changed over to a new and incomprehensible standard of thinking. The barrier between them was as tangible as the surface of a televisor screen. They could see one another through it, but they could no longer touch.

Ferguson's shoulders sagged a trifle as he gave up the attempt at communication. He turned toward the door, hesitating. He glanced back with a new wariness at this man who was suddenly an enemy.

What, he wondered, were Archer's orders from Lawson? Surely they couldn't afford to let him go. He groped in vain for an understandable parallel. In this situation a normal human would have shot him as he went out the door, or locked him safely away where he could do them no harm. But Lawson had never operated with normal human weapons like these. Lawson's weapons—

Archer said suddenly, "You're free to go whenever you like. One thing, though. Listen, Ferguson. Lawson tried to take out another policy with your company today, and was turned down. It looked like a poor risk. I thought you ought to know."

Ferguson could read nothing in Archer's face. The barrier still stood between them. He thought there was more than met the ear behind that statement, but he knew that he could only wait. He went out through the door and down the walk, in the bright yellow sunshine of his familiar world. It was a world that depended on him for its salvation. And a world he could not save because it would not heed his warning.

Flickers of hope rose irrationally in his mind. Had Archer, after all, been trying to tell him that Lawson was fallible? If ILC had refused a policy, it might mean that their suspicions were roused at last. It might mean that he had not lost the battle after all. Perhaps they would listen now. Rapidly he began to calculate how long it would take him to get back to headquarters—

But between him and his calculations kept swimming the recollection of the liner *Nestor* and the derelict warhead, moving closer and closer in uncharted space toward the rendezvous that only Lawson had foreseen.

Two hours later Ferguson closed the door of his office behind his secretary's somewhat indignant back, and glanced with a sigh of relief around the small, empty room. He knew he hadn't done his cause any good by his unswerving course through the building, brushing aside the surprised greetings of what friends he had left after the last two years. The most important thing in the world just now was solitude. He locked the door and turned to his private visor screen.

"Get me the current file on Benjamin Lawson," he said. "Recently he applied for a policy that was refused. I want to know why." He waited impatiently, drumming on the resilient plastic frame with unsteady fingers.

"Hello, Mr. Ferguson," the screen said pleasantly. "Glad you're back. There's been nothing new on Lawson since you left, but I'll send the file up right away."

"Don't bother, then. I want to know about this new policy. Hurry it up, can't you?" He heard his voice rise shrilly, and with an effort forced it to more normal tones.

There was a moment's silence. Then the face said, with a shade of embarrassment, "Sorry, Mr. Ferguson; that seems to be under TS."

"What do you mean?" he asked irritably, and before she could speak—"Never mind, never mind. Thanks." He snapped the switch.

Statement of the Ownership, Management, etc., required by the Acts of Congress of August 24, 1912, and March 3, 1933, **of Astounding Science Fiction published monthly, at New York, N. Y., for October 1, 1947.**

State of New York, County of New York (*ss.*)

Before me, a Notary Public, in and for the State and county aforesaid, personally appeared H. W. Ralston, who, having been duly sworn according to law, deposes and says that he is Vice President of Street & Smith Publications, Inc., publishers of Astounding Science Fiction, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 3, 1933, embodied in section 537, Postal Laws and Regulations, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are: *Publishers*, Street & Smith Publications, Inc., 122 East 42nd Street, New York 17, N. Y.; *editor*, John W. Campbell, Jr., 122 East 42nd Street, New York 17, N. Y.; *managing editors*, none; *business managers*, none.

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Of Street & Smith Publications, Inc.,
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Sworn to and subscribed before me this 30th day of September, 1947. Edward F. Kasmire, Notary Public No. 497, New York County. (My commission expires March 30, 1949.)

They had never pulled TS on him before. Top Secret stuff was technically limited to the three highest-ranking officers of the company, though actually staff members of Ferguson's rank honored such rules more by their breach than by their observance.

I mustn't let it throw me, he said silently. *I can't let it throw me.* And after a moment he knew what he could do. There were three men whose televisor screens would automatically reply to a TS query. He made two calls before he found an empty office. It was lunch time, fortunately for him.

He unlocked his door, went down the corridor to the emergency stairs, and climbed three floors. On the way he formulated a plausible enough tale, but he didn't need to use it. By a stroke of better luck than had attended him so far, the first vice president's office was empty. He closed and locked the door behind him, and switched on the screen for one-way visual.

"Give me the latest TS on Benjamin Lawson."

"Well, that's that," Archer said.

Lawson lay back in his chair, lifted the trumpet to his lips, and blew a long clear note at the ceiling. It might have been a note of derision at the human race, but Archer did not choose to read that into it. He knew Lawson too well—or he thought he did.

"It's a pity," Archer went on. "I was sorry we had to do it, but he wouldn't leave us any other out."

"Does it bother you?" Lawson asked, squinting at him over the rim of the trumpet's horn. Reflected in the brass Archer saw his own distorted face and the shadow of worry on it.

"I suppose it does, a little," he said. "But it couldn't be helped."

"It's not as if we'd planted a booby-trap on him," Lawson pointed out. "We only arranged for him to know the truth."

Archer laughed shortly. "Misused semantics. Truth sounds innocuous, doesn't it? And yet it's the deadliest thing you could ask any human to face. Or any superhuman, either, I should think."

"I wish you wouldn't call me superhuman," Lawson said. "You sound like Ferguson. I hope *you* don't think I want to conquer the world."

"I tried to tell him you didn't, but by then he was seeing a superman behind every tree, and there was nothing I could say that would make sense to him."

Lawson slid further down into the chair and ran through a brief series of riffs. The room was full of clear resonance for a moment. Before it died away Lawson put aside the trumpet and said, "I don't suppose it would make sense to anybody brought up on anthropomorphic thinking."

"I know. It took me a long time to come around. And I suppose it was only by identifying my interests with yours that I was able to see it."

"Ferguson went to extremes, but the two things he was so afraid of

are the conclusions any anthropomorphic thinker would arrive at if he knew the truth about me and the other eighty in the crêches. He was perfectly right, as far as he went, about the parallel between gorilla and human maturation, of course. The immature gorilla is naturally a gregarious, competitive critter. That's part of its growing up. That's progress, if you like. In the crêches, we kids used to think our football and baseball and skatch scores were the most important things in the world—the goal was to win. But the real idea was to develop us physically and teach us mental and social co-ordination, things we'd need when we grew up. You don't see grown men taking things like that so seriously."

Archer said, "Yes—but try making Ferguson see the parallel! Or any other anthropomorphic thinker."

"Progress as men see it," Lawson said pedantically, "is not an end in itself; it is as much a means to an end as any schoolboy's game."

Archer grinned. "Paragraph 1, Chapter 1, Primer for the New Race," he suggested. "There's no use trying to explain that to Ferguson. He has a big blind spot on that side of his mind. His whole culture's based on the idea of competition and progress. It's his god. He'd fight to the last ditch before he'd admit his . . . his football score isn't the last great hope of the race of men."

"He has fought to the last ditch," Lawson said. "He's in it now. We can dismiss Ferguson." He regarded his trumpet thoughtfully and said, "Paragraph 1, Sentence 2. When the end has been achieved, the means is no longer of any value. We know this is so, but never try to tell it to a human." He paused and winked at Archer. "Your case is the exception, of course," he observed politely. "Paragraph 1, Sentence 3. Never blame the human for that. We can't expect him to admit that his whole culture is no more than a childish game to which there must be an end if the game is to serve any purpose. Never look down on humans—they laid the foundations for us to build on, and we know no more than they what shape that building will take."

Archer was silent, a hint of deference in his manner. This was the only subject which he had ever seen Lawson approach seriously. "Paragraph 2," Lawson went on, scowling at the trumpet. "Never attack a human except in self-defense and then destroy him quickly and completely. Humans think autistically; they will always be convinced you want to rule their world. Their egotism will never let them admit the truth. We have no need of their toys; we must put away childish things."

There was a brief silence. Then Archer said, "We ought to get that primer on paper before very long; we'll be needing it."

"Maybe we ought to dedicate it to Ferguson," Lawson suggested sardonically, as he picked up the trumpet and delicately fingered the keys.

The clear note of the horn vibrated through the room again.

"You make me think of Joshua," Archer told him.

Lawson grinned. "Gabriel," he said succinctly.

Ferguson leaned tensely toward the screen. It flickered, and a voice said, "Report on policy refused November 4th to applicant Benjamin Lawson—" The voice went on, and Ferguson listened for a stunned moment and then refused to listen.

This is the chain reaction, he told himself, in the deliberate, controlled silence of his mind, while the voice spoke on unheeded from the screen. This is the personal devil that every man has feared since the first Bomb fell. But we've watched for the wrong reaction. This is fission no one expected, fission between the old race and the new. No one knows but me—and Archer—and I'll never be able to give the warning—"

This was defeat. There was no use fighting any longer. He saw failure and disaster before him, the control of all Earth wrested from human hands and Lawson lording it like Nero over a populace of slaves. For Ferguson was an autistic thinker to the last. He saw Progress at full stop, and that was the last abyss of all, for beyond it his narrowing mind could see nothing but the dark. The last barriers of his defense went down, and he let himself listen to the words that the screen was repeating.

The screen said:

"Lawson desired to insure against the possibility of ILC officer Gregory Ferguson becoming insane. Since investigation shows that Ferguson has already exceeded the margin for error allowable for developing paranoid psychoses—"

Moving through uncharted space, the liner *Nestor* and the derelict warhead crashed once more in the infinite darkness of Gregory Ferguson's mind. After that, there was white incandescence.

All thinking stopped.

THE END.

THE ANALYTICAL LABORATORY

We're really cramped for space this month! So, July, 1947:

Place	Story	Author	Points
1.	Fury (conclusion)	Lawrence O'Donnell	1.42
2.	With Folded Hands	Jack Williamson	2.03
3.	Logic	Poul Anderson	3.00
4.	The Figure	Edward Grendon	3.32

THE EDITOR.

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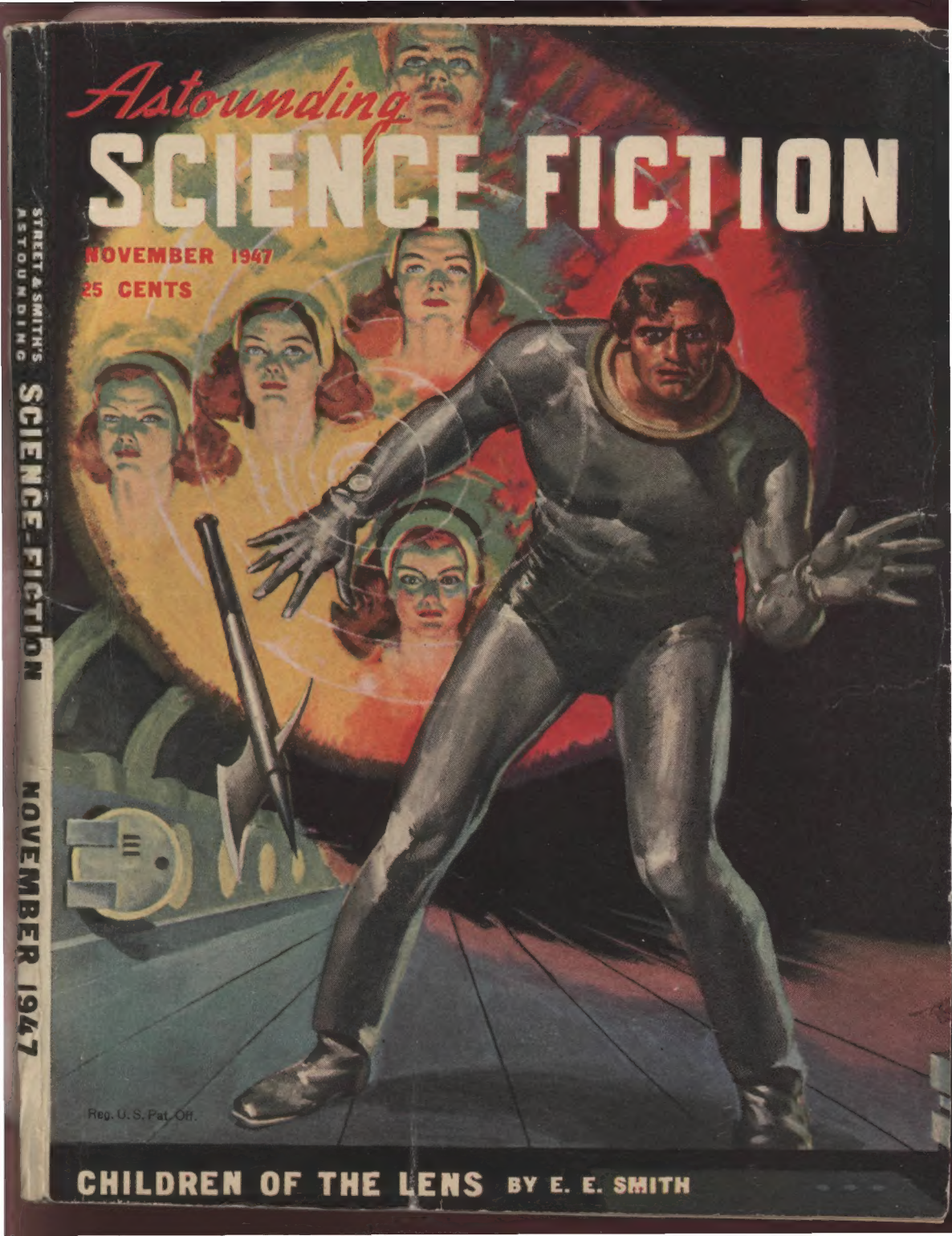
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